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American Foundryman

A PUBLICATION PRESENTING ASSOCIATION AND CHAPTER ACTIVITIES

Stockyards scene. (Photo courtesy International Harvester Co., Indianapolis, Ind.)

Read Vice President Simpson's Letter, See Inside Front Cover.
Important Association News and Features Throughout This Issue.
Read It — Do Not Lay It Aside.

January 1941

A Wise Investment

To All Foundrymen—

At no time in the history of our industry is the need of cooperation more important than it is today. Representing as we do the creative effort of making castings—thus supplying essential and lasting parts for machines and mechanical devices of all kinds—we should all get together for our common good and for the development of technical and sales problems necessary to service properly the many users of foundry products.

Every company and individual associated with the industry should participate in the A.F.A. The relatively low cost for membership can be made a wise investment. This is particularly true during these times of changing world conditions. We should help each other not only to make a better product, but strive to increase value to those who depend on us. We are in the business not for better or worse but to place castings of all kinds on the high plane of usefulness to which they are entitled.

If you are not already a member, help make the A.F.A. a powerful agent to benefit not only the industry itself but the world at large, by joining in this great movement.

Sincerely yours,

H. S. Simpson

H. S. SIMPSON, Vice President A.F.A.
and National Chairman A.F.A.
Membership Committee.

C. Eng. Found.

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American Foundryman

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The Growth and Development of the American Foundrymen's Association

CREDIT for the formation of the American Foundrymen's Association rightfully belongs to the Philadelphia Foundrymen's Association, now the Philadelphia chapter of A.F.A. In 1895, the first definite movement to form a national foundrymen's organization was made by Howard Evans, then, and until his death, secretary of that organization. At that time, several local and regional foundrymen's organizations existed in the country, among the best known being the New England, Philadelphia, Pittsburgh, Western Foundrymen's Associations and a group in Texas. Headquarters of the Western Foundrymen's Association were in Chicago and the New England association in Boston.

In 1895, Mr. Evans corresponded with the Western Foundrymen's Association concerning the possibility of organizing a national foundrymen's group. As a result of his correspondence, this idea was discussed by both of the above mentioned associations. Information that such a movement was on foot early came to the attention of the late John A. Penton, at that time publisher and editor of *The Foundry*, and Mr. Evans was successful in enlisting Mr. Penton's aid in circularizing the industry and in publicizing a call for a general convention to be held in Philadelphia.

A.F.A. Organized

Evidently, no particular purposes or aims of the proposed society had been considered, because no mention is made of them in the advance material calling the convention. The idea was expressed that foundrymen should get together. The call was in the nature of an appeal for a social get-acquainted session with the hope, evidently, that such a session would ultimately result in the formation of a strong central group. As the result of these efforts, at 2:00 P. M., June 12, 1896, Francis Schumann, president, Philadelphia Foundrymen's Association, called the first annual meeting to order. In his opening remarks Mr. Schumann stressed the necessity for unity within the industry. So far as the aims and objectives of the national association were concerned, little was said during this first meeting. It is, however, significant that a number of papers dealing with foundry subjects, such as equipment, green sand molding, apprentice training, and the strength and chemistry of iron, were presented.

At the closing session of the organization meeting, Mr. Schumann was elected president of the new organization, and vice presidents were elected from the New England, Mid-Atlantic, Southern, Southwestern and Pacific States, and Canada. Mr. Penton was elected the first secretary and Mr. Evans the first treasurer. It is also worthy to note that, while the first call was made in the interests of forming a national association, one of the first actions of the convention was to propose that the word "American" should be substituted so that Canadian foundrymen would feel that their co-operation was desired and expected.

The summary of the accomplishments of this first meeting may most easily be summarized in a statement made by C. E. Hoyt in 1926 in *The Daily Foundry*, issued during the Detroit Convention of that year, which said:

> "The meeting closed and the infant society, with an initial membership of 345, was delivered to the tender care and solicitude of its officers with no suggestions as to its care and raising."

Franklin Institute Session of First Convention of A.F.A.—Philadelphia, 1896

Apprentice Training First Committee Activity

During the first year of the Association's life there was little activity except that the membership was increased to 500 and the proceedings of the first convention were published under the title of *The Journal.*

The second convention, which was held in Detroit, May 10 to 13, 1897, brought forth for the first time the exhibition idea. In addition, several important technical papers were read and a resolution was presented by the Apprentice Training Committee, the first committee of the Association to be appointed, which offered a uniform apprentice plan.

At the 1900 convention in Chicago, Dr. Richard Moldenke was elected secretary of the A.F.A. and served continuously until 1912. It was during this period that A.F.A. developed its objectives and particularly its technical activities. Much of this development was due to the personal interest and the influence which Dr. Moldenke exerted.

Objectives Developed

The objects of the Association also were defined as, to promote the arts and science practiced or applied by foundry operators, or others concerned in the production of castings; and to this end, to hold and conduct meetings of its members for the consideration and discussion of subjects pertaining or related to the business of foundry operators. These are the same objects of the Association today as voiced in its by-laws, with slight changes in wording.

Development of Technical Activities

In 1897, the first technical committee activity was initiated by the appointment of a Committee on Cast Iron Testing, which was advocated by Thomas D. West, who served as the first chairman, and in 1906 as president of A.F.A. This committee presented its first report at the third annual convention in Pittsburgh and recommended that certain procedures be followed. An early result of this committee's work was the development of standardized cast iron drillings to be used in chemical analysis of iron. Later, this activity was turned over to the National Bureau of Standards, Washington, D. C., which now manufactures standard samples for nearly all type of metals.

Some of the early outstanding contributions to A.F.A. sessions were the presentation, in 1902, by the late Albert Saveur, who has been called the father of modern metallurgy, of the first illustrated paper on the application of metallurgy to foundry work; in 1903, the presentation of a paper by the late Percy Longmuir, the first among A.F.A. papers to contain micographs of cast iron; in 1903, the publication of a metallurgical section of *The Journal* devoted to standard methods of analyzing cast iron under the direction of H. E. Field; and in 1906, the publication and presentation by Dr. H. Ries, present technical director of A.F.A. Foundry Sand Research Committee, of a paper dealing with tests of foundry sands from Michigan and Wisconsin.

From this early beginning, the technical activities of the American Foundrymen's Association have developed until they now include committees and subcommittees on some seventy-five subjects embracing a membership of over 300 individuals.

Early in the history of the Association, the value of the work of the technical committees was recognized. Likewise, it was known that the authors, and particularly those members who served on committees, were indispensable to its success. Furthermore, members of the organization realized that, if the American Foundrymen's Association was to take its place among the great technical associations of the country, it could do so only through its increasing service to the foundry industry.

Meeting Developments

During the first several years of the life of the new Association, the technical meetings were of a general character. Papers on several more or less unrelated subjects often were presented at the same session. As the activities of the Association grew and more and more technical papers were presented, it was natural that an effort should be made to segregate papers on the same general subject, such as gray iron, malleable, steel, or nonferrous, into separate meetings.

L. L. Anthes inviting the foundrymen to meet in Toronto for their convention in 1908.

Division Organization

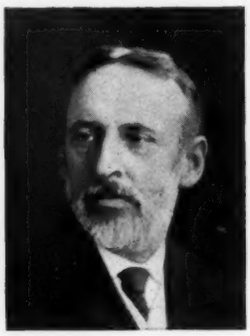
In 1929, a Technical Activities Correlation Committee was appointed and reported a plan to the Board of Directors for dividing the Association into divisions. Following the acceptance of the report, the Gray Iron, Steel, Malleable and Non-Ferrous Divisions were organized. Last year, an interested group of pattern-makers presented a petition to the Board for the organization of the fifth, or Patternmaking Division of A.F.A. This petition was approved unanimously and the new division will sponsor its first session at the 1941 convention.

Publications

The Journal, published following the first convention, was composed of reprinted information which had appeared in *The Foundry.* In 1904,

The Journal was enlarged and continued to be published until 1911 when the first volume of Transactions of A.F.A. appeared. Later, papers to be presented at convention sessions were preprinted and distributed to members before the convention for the purpose of stimulating discussions at convention sessions.

In 1924, one of the first special publications was issued by the Association entitled, *"Tentatively Adopted Methods of Tests and Resume of Activities of Joint Committee on Molding Sand Research."* Many followed dealing with a variety of subjects. During later years, some of the most important publications of A.F.A. have been published such as the *Cast Metals Handbook,* in 1935, and again in 1940, *Alloy Cast Irons* and the fourth revision of the book, *Testing and Grading Foundry Sands and Clays* in 1938 and in 1939, the first lecture course book, *The Microscope in Elementary Cast Iron Metallurgy.*



Thomas Turner, Birmingham, England. The first honorary member of A.F.A.

Each year, the *Transactions of the American Foundrymen's Association* have been distributed to members in one form or another since 1897. With the large volume of interesting and useful information presented annually at conventions, these volumes now constitute a library on castings manufacture and related subjects that is second to none throughout the world.

Awards Founded

During these years of industrial development and the presentation of much valuable information, various individuals had sought some way of recognizing those persons who not only had contributed valuable work to the Association, but who were outstanding in the industry. At the 1920 Columbus convention, announcement was made that John A. Penton, the first secretary of the Association; Joseph S. Seaman, the third president; William H. McFadden, tenth president; and J. H. Whiting, all of whom were charter members of the Association, had each contributed a similar amount to a fund to be known as the Awards Fund of the American Foundrymen's Association. The income from this fund was to be used for the purpose of recognizing, by means of medals, outstanding contributions to the foundry industry. The fund was to be governed by a Board of Awards whose membership would consist of the last seven living past presidents of the Association.

The Awards Funds were accepted, medals designed, and the first presentation was made at the Milwaukee convention in 1924. The first two recipients were Enrique Touceda, who received the John A. Penton medal, and John Howe Hall, who was presented with the J. H. Whiting medal.

Since this first presentation ceremony, many outstanding men in the foundry industry, both in this country and abroad, have been recognized for their contributions to the industry. Names of medal recipients will be found elsewhere in this issue.

Honorary Membership

Honorary membership in the Association is conferred on individuals who have rendered long and worthy service to the Association and the industry. It is interesting to note that Prof. Thomas Turner, University of Birmingham, England, was made the first honorary member in recognition of his pioneering work on the metallurgy of cast iron.

European Exchange Papers

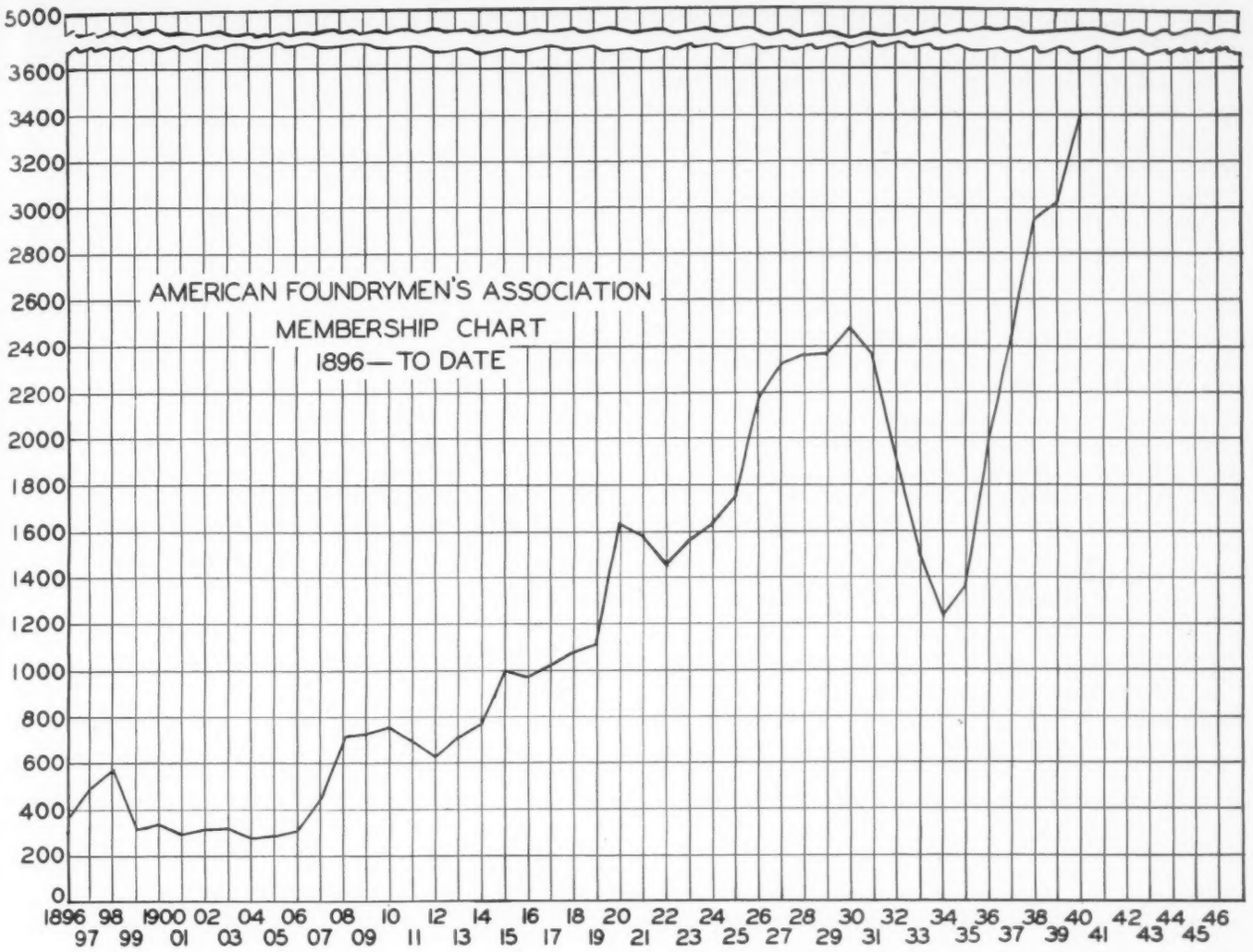
As the Association continued to grow, from its early beginning, it attracted the attention of various foreign technical bodies. This resulted in an interchange of information and correspondence until in 1920, the A.F.A. and the Institute of British Foundrymen entered into a formal agreement for the annual exchange of papers dealing with important questions of foundry practice, the first of which was presented by George K. Elliott, in which he showed the possiblity of the use of the electric furnace for the production of high-strength cast iron.

Following the exchange agreement between the A.F.A. and the I.B.F., other European foundrymen's associations began an exchange of information with the A.F.A. It is interesting to note that in the period between the time when the formal agreement was entered into between the A.F.A. and the I.B.F., that approximately 100 papers have been exchanged between the American Foundrymen's Association and various foreign associations.

International Congresses

This exchange paper agreement set in motion and stimulated the interchange of ideas between foundrymen throughout the world. An outgrowth was the staging of the first International Foundry Congress in Paris in 1923 by the Association Technique de Foundrie de France.

At the opening session of the Paris Congress, the heads of the foundrymen's organizations in six countries were seated on the platform. During this International Congress, the Committee of International Foundry Technical Associations, whose duty it was to stage periodically International Foundry Congresses to which the foundrymen of the world were invited, was formed. International Foundry Congresses were held in United States in 1926 and 1934.



American Foundrymen's Association membership chart showing growth of membership since Association's birth in 1896. Objective of new membership drive is 5,000 members.

Exhibits

The history of exhibits, staged for foundrymen of the United States, is interesting because it shows that even in the early days of the Association, foundrymen had exhibited their interest in the supplies and equipment necessary for the production of castings. As early as the second convention in Detroit, in 1897, an exhibit was held under the direction of a committee for the exhibition of foundry equipment and supplies.

It is a far cry from that small exhibit to the large exhibition of foundry equipment, material and supplies now staged by A.F.A. This interest of foundrymen in supplies and equipment is illustrated by the fact that convention attendance is always larger by a considerable amount when exhibits are held in connection with the annual convention.

From 1906 to 1926, exhibits were held annually in connection with conventions of A.F.A. Since 1938, it has been the policy to stage such shows biennially on even-numbered years. Some of the outstanding developments in foundry equipment and supplies had their first showing at A.F.A. exhibits, which have stimulated both the improvement and invention of various types of foundry equipment. These exhibitions of foundry equipment and supplies are milestones in the progress of the foundry industry.

Membership

As the activities of the American Foundrymen's Association increased in number year by year, it was natural that the membership should increase. At first, the growth was slow, as is illustrated by the accompanying chart, but rose to a peak in 1930 during the "boom" times. Naturally, membership decreased sharply during the depression years until 1934, when A.F.A. had only slightly more than 1,200 members. In the six-year period since 1934, A.F.A. experienced a growth almost equal to the increase in membership which had taken place in the interval between 1896 and the previous high of 1930.

Chapter Growth

There are several reasons why A.F.A. has grown so rapidly during this period. First and foremost, however, is that it has increased its service to industry by the formation of chapters and by interesting more and more of its members in both national and chapter committee service. Such members are the backbone of the Association and

deserve the thanks of the industry for their unselfish service.

Organized fundamentally for the dissemination of information for increasing the quality and use of castings, the chapter movement has made it possible to broadcast such information more generally and thereby permit A.F.A. to serve the industry more widely.

Prior to 1934, when the first chapter of A.F.A. was formed in Chicago, only one meeting, the annual meeting of the Association, was held each year. Since the formation of chapters and the holding of regional conferences sponsored by chapters, the number has increased greatly. In 1940, with eighteen chapters of the organization located in leading centers throughout the country, over 150 meetings were held in the name of A.F.A. with an estimated attendance of over 20,000. If we include in these figures the total attendance at the annual convention and exhibit, plus attendance at regional conferences, the total is estimated at between 35,000 and 40,000.

Realizing that there are some companies and individuals in the industry who are not availing themselves of the extensive services of A.F.A., the Board of Directors has authorized a national membership campaign. President Shannon and the National Membership Committee, of which Vice President Simpson is chairman, have set a goal of 5,000 members for the end of the fiscal year, June 30, 1941. If you are a member of A.F.A., appoint yourself a committee of one to secure at least one new member between now and June 30. If you are not a member of A.F.A., you are invited to join this group of companies and individuals whose sole object is the advancement of the foundry industry and its products.

Some Present Activities of A.F.A.

THE technical work of the American Foundrymen's Association may be divided into two classes, general and specific. The committee work of general interest, such as apprentice training, job evaluation and time study, costs, sand research, cupola research, etc., are under the jurisdiction of committees on these subjects, which are not affiliated with any division of the Association.

Divisions

The remainder of the technical work is of specific interest to gray iron, steel, non-ferrous and malleable foundrymen or patternmakers, each of the groups being organized as divisions of the Association headed by a chairman and an executive or advisory committee. The present divisional organization, under which A.F.A. functions, was established in 1929 upon the recommendation of the Technical Activities Correlation Committee. Through the committees of these divisions are presented technical papers and reports of investigations and research which are published for study and reference.

Apprentice Training

Apprentice training is one of the oldest activities of the Association and was established during the first year that the Association existed. This committee has established *"Standards for Four Year Foundry Apprenticeship,"* and *"Standards for Patternmaker Apprenticeship."* It is now engaged in compiling a pamphlet which will describe the opportunities for young men in the foundry industry.

One of the main duties of the Apprentice Training Committee is the staging of annual contests in patternmaking, gray iron, steel and non-ferrous molding. These contests are national in scope and cash prizes and certificates are awarded to winners in the National contest, which is held in conjunction with the annual convention of the Association.

Sand Research

In 1921, the Board of Directors of A.F.A. authorized the organization of the present Foundry Sand Research Committee for "research on natural and synthetic molding sands as well as on the employment of greater proportions of used sand in molding operations." Although some work had been done prior to that time, the organization of that committee stimulated the great interest in foundry sands that exists today. The committee was organized as a joint committee with the assistance of the Division of Engineering, National Research Council. Many financial contributions were made to the project to insure its success.

Following its organization, the committee immediately began a survey of the existing literature on foundry sands and then began to develop tests for the various properties. Since that committee was organized, it has standardized, or tentatively so, tests for permeability, moisture, compression strength, sheer strength, tensile strength, mold hardness, sintering point, fineness, and others. At present, the committee is actively studying the high temperature properties of foundry sands as well as durability or life of sand mixtures, core hardness, flowability, and the effect of sand on the properties of castings.

Cupola Research

The Cupola Research Project of the Association is just getting under way. Committees and subcommittees have been organized for the study of specific problems. The first undertaking of the committee will be a review of both American and foreign literature on cupola practice and the publication of a cupola handbook. After the literature search, problems about which little or nothing is known, or points that are very controversial, will be studied in a research program for which funds are now being raised.

Cast Metals Handbook

In 1935, the first edition of the Cast Metals Handbook was published. Its publication culminated the work of a committee of leaders in the Foundry Industry. Originally sponsored by the Joint Committee on Foundry Education in Engineering Schools, the Cast Metals Handbook has for its objective:

> "To present to engineers, designers and all users of castings, editors of engineering handbooks and engineering students, condensed, authoritative and up-to-date information on cast metals. These data to be such as will enable the user to select the material best suited for his purpose and which will give him needed information to co-operate with foundries in obtaining his castings in the most satisfactory manner."

The second edition of this handbook, completely revised, and enlarged, was published in 1940. Engineers and foundrymen alike have pronounced it of great value to them.

Annual Lecture Courses

The first annual lecture course sponsored by A.F.A. was held in connection with the Cincinnati convention in 1939. R. M. Allen, consulting metallurgist, Bloomfield, N. J., delivered an interesting series of lectures on the microscope in elementary cast iron metallurgy. This series was published in book form.

Last year at Chicago, Dr. C. W. Mason, Cornell University, Ithaca, N. Y., presented a series of demonstrations on the crystallization of metals. At the 1941 convention in New York, H. W. Dietert, Harry W. Dietert Co., Detroit, will present a series on "Coremaking."

A committee of the national organization has been appointed which will plan annual lecture courses to be held in conjunction with annual conventions of A.F.A. It is planned to publish such lectures in book form and the subjects are to be those which have broad application to the manufacture of castings.

Cost Committee

The Foundry Cost Committee of A.F.A. is one of its oldest committees. Through its efforts a uniform cost system for gray iron foundries was established and a firm was hired to make the actual installations. Later the entire system was published in the *Transactions of A.F.A.* Through this work, interest was created in the subject and served as a basis for much of the uniform cost accounting work that now is being done by trade associations of the industry.

At present, the committee is engaged in making a comparison of cost systems used in the various divisions of the industry with a view toward establishing the similarities. In addition, its constant aim is the promotion of uniform cost accounting within the industry.

Alloy Cast Irons

At a meeting of Advisory Committee of the Gray Iron Division of A.F.A. in 1934, it was suggested that the division sponsor a book dealing with the manufacture and properties of alloy cast irons. A large number of producers and consumers of both alloys and cast irons were canvassed and it was the unanimous opinion that such a book would fill a need of the industry. Accordingly a Committee on Alloy Cast Irons was organized and held its first meeting the following year.

The committee was composed of many leading metallurgists in the cast iron industry and representatives of other technical societies, such as A.S.T.M., S.A.E. and A.S.M. The committee worked on the volume for four years and published a comprehensive volume entitled "Alloy Cast Irons" in 1939.

The book was well received by the industry and, in conformity with established practice, many copies were sent to engineering schools and colleges for the purpose of building an appreciation of cast products in the minds of embryo engineers.

Chapters

Prior to 1934, A.F.A. was a national association of companies and individuals which held one meeting annually and disseminated information concerning the improvement of production and properties of castings and increased usage through its members. In 1934, the first chapter of A.F.A. was organized in Chicago and this was the beginning of a movement which in the short space of six years has grown to 19 chapters in leading foundry centers throughout the country and embraces a large percentage of the present membership of A.F.A.

Since the organization of the first chapter, interest in A.F.A., and what it stands for, has grown rapidly. The chapters, particularly those members who are serving and have served as officers and directors of the organizations as well as the members of chapter committees, merit the thanks of the industry for not only a renewed interest among consumers in cast products but for their unselfish service to make the foundry industry more articulate than it has been in the past. Many chapters are leaders in their local communities and often their influence is felt throughout the country, especially when some outstanding piece of work has been done.

One of the greatest advantages of chapters of A.F.A. to the foundry industry is that they have brought the attention of industry in general to the accomplishments of the castings industry. Another is that such organizations have had a tendency to consolidate not only the thought but the actions of the industry. Both are potent factors in the goal of national industry unity.

Chapter Lecture Courses

While the activities of the various 19 chapters of A.F.A. are many and varied, one of the movements which is creating the most interest is the lecture courses offered by several chapters. These courses are, in general, designed for the foreman, sub-foreman, gang leader, shop man and apprentice and deal with the fundamentals of foundry practice.

From its organization, A.F.A. has been interested

in material standards. This is illustrated by the action of one of its first committees which manufactured standard samples of irons.

In 1898, the American Society for Testing Materials was organized for the purpose of promulgating standards for various materials. One of the first interests of this organization was standards for metals. Realizing the need for a national specifications making body, the A.F.A. backed the new organization and became a charter member.

Since that time A.F.A. has worked with A.S.T.M. either through representation on A.S.T.M. committees or recommending standards to that body. However, it was not until 1922 that A.F.A. adopted a definite policy of co-operation with A.S.T.M. and recognized that organization as the specifications making body for the industry.

This policy has continued to the present and A.F.A. has representation on all A.S.T.M. committees on specifications of interest to the foundry industry. This policy of representation, however, is not confined to A.S.T.M., as A.F.A. has representatives on many other associations and societies whose activities are of interest to the foundry industry.

As an illustration of the co-operation between A.F.A. and A.S.T.M., these organizations now are co-operating on the evolution of a set of standards for classification of graphite flake size. Meetings have been held and the work discussed to the point that it may now be stated that in all probability the standards will be presented for tentative standard rating within the next few months.

Some Trends in the Malleable Foundry

By Carl Joseph, Saginaw, Mich.

FOR some years past, the malleable iron industry has been faced with a tonnage loss. A number of factors have contributed to this loss, among which are—reduction in weight of the malleable casting—and—the substitution of gray iron castings and steel stampings. This has caused some foundries to operate at a reduced schedule, and in many cases, has resulted in bankruptcy.

Some of the more progressive units in the industry have appreciated the many advantages of castings over forgings, and have spent much time and money educating metallurgists and engineers to the possibilities of physical properties that can be obtained by the heat-treatment of pearlitic malleable.

Improved foundry practice, together with the marked improvements in metallurgy, as applied to foundry operations, have given the automotive and allied industries castings replacing forgings, and in many cases, at a distinct saving in overall cost. Because pearlitic malleable responds readily to induction, flame or bath hardening, this metal offers a lucrative field for the malleable iron industry.

A few of the parts, which in the past year, have replaced steel forgings are—rocker arms for valve-in-head motors, camshafts, shifter yokes and gears.

The progressive malleable iron executive should be aware of the fact that he will need additional tonnage when the present artificial prosperity has spent itself. Now is an excellent time for him to get ready on the development of new products, and we can see where pearlitic malleable offers the malleable iron industry an excellent opportunity to acquire this tonnage by the replacement of steel forgings and alloy gray iron.

Mr. Joseph, metallurgist, Saginaw Malleable Iron Division, General Motors Corp., as chairman of the A.F.A. Malleable Division program committee, has, at the Association's request, presented some views on the trends in the industry. He, working with his program committee, is developing a program of papers for the 1941 convention which will discuss in detail these trends of the industry.

Trends in the Steel Casting Field

By John Howe Hall, Philadelphia, Pa.

RADIOGRAPHIC examination of castings, especially comparatively heavy castings used for structural purposes and high-pressure, high-temperature service, has resulted in improvements in steel foundry technique and design. Probably nothing in the past decade has been of more assistance to the foundryman in educating designers to the inherent difficulties in producing sound castings of the complicated shapes necessitated by the exigencies of service. At first regarded by the foundryman as an unmitigated nuisance, radiography has therefore proved a boon to the producer of castings, since it has served, as nothing else could, to convince designers that hot spots due to junctions and uneven sections are really a major source of difficulty, and should be as far as possible eliminated from their design.

At the same time, the foundryman has learned that sections he has always regarded as sound are in fact less reliable than he has supposed, and he has been led to adopt better methods of molding and pouring to eliminate these difficulties. In particular, the necessity of adding considerable metal at vital points in castings, even when the excess has to be burned or machined off at considerable expense, has been brought forcibly to the attention of the foundryman. He in turn has convinced the designer of this necessity, and either the extra metal is incorporated in the design or the foundryman is allowed to take account of it in his selling price.

Improvements in welding technique have resulted in the

Mr. Hall, as chairman, Steel Division of the A.F.A., has here, at the request of the Association, presented some thoughts on what he considers important and outstanding technical trends in the steel casting field.

wider use of castings as parts of welded assemblies. In some cases castings are welded to castings, the resulting job being superior to an all-cast one. In other cases, castings are incorporated in assemblies made up largely of rolled or forged materials. Though at first this tendency may result in a decrease in the production of castings, it is bound in the long run to have the opposite effect, since whatever results in cheaper and better goods, eventually leads to increased sales, offsetting the temporary decrease in casting production.

The wide acceptance of properly welded assemblies of these types has at last led to the recognition of welding as a part of the technique of casting manufacture, whereas for many years it was regarded by the buyer with grave suspicion, as simply a device to salvage defective castings.

The production of cast steel protective plates for automotive equipment is one of the outstanding developments of the past year.

Developments in the Cast Iron Field

By W. H. Spencer, Philadelphia, Pa.

RECENT developments in the gray iron field have consisted largely in the perfection of work previously undertaken. This applies particularly to the alloy cast irons. Instead of recommending one alloy for several applications, it is becoming the custom to "tailor" the alloy to each particular use. Some foundries are successfully producing only special cast irons. Along with the production of wear, heat and corrosion resistant cast irons has come the manufacture of still higher tensile strength gray iron, as high as 70,000 to 80,000 lb. per sq. in.

Where cast iron is employed under wear conditions involving a tendency to scuffing of the metal, surface coatings, either non-metallic or metallic, have been used with success.

The old reliable cupola furnace has been the subject for changes, some of which are still in the experimental stage. The use of preheated blast has become more general and drying of the blast is showing results where careful control of the melting operation is necessary. Drying of the blast also has been applied to some blast furnace operations.

Most of the attention in cupola control has been centered on the air supply, both as to its condition and application, including the development of methods for regulating the tuyeres independently.

Some work that is not much past the experimental stage deals with methods for water-cooling the lining of the cupola.

Present business conditions, demanding an increased tonnage of high grade castings, tend to bring into commercial practice many of the ideas which have been developed experimentally in the past. Instead of enlarging existing plants to take care of emergency production, the trend is towards obtaining greater efficiency from existing equipment.

Mr. Spencer, General Chairman, A.F.A. Gray Iron Division, was asked by the Association to present some new developments pertaining to the Gray Iron Industry. Herein are a few personal opinions advanced by him concerning the trends in the gray iron field.

New Conditions Face Non-Ferrous Industry

By W. J. Laird, East Pittsburgh, Pa.

THE non-ferrous industry in general and the foundry division of this industry in particular are entering the period of "specifications consciousness." This is in part due to the national defense program and also to the general design developments which are tending to encroach upon maximum physical properties. Because of this new condition, it is quite probable that new methods must be evolved and more meticulous application of present knowledge is necessary.

Many thousands of pounds of non-ferrous castings are being demanded by the various industries of the country to meet present requirements. The advantage must be taken of various methods necessary to increase the physical properties of present mixtures and to insure perfection in product. Heat treatment in some instances has raised the physical properties of certain brasses, bronzes and light metal alloys. Demand for aluminum and magnesium castings has increased considerably. New developments in all of these alloys have taken place in the past few years. Melting and molding practice both are coming in for closer scrutiny. Sand

(Continued on Page 31)

W. J. Laird is General Chairman of the Non-Ferrous Division of A.F.A. and is Metallurgist, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Mr. Laird is in constant touch with new developments in the non-ferrous foundry field.

Vice President Simpson Appointed Chairman, National Membership Committee

ON June 30, 1940, the American Foundrymen's Association enjoyed the largest membership in its history. President Shannon, in his acceptance speech, stressed his hopes and desires for a material increase in A.F.A. membership during his term of office. This was not an idle statement for within a few weeks President Shannon announced as a membership goal, 5,000 members by June 30, 1941.

To lead in this concerted effort to increase A.F.A. membership, President Shannon appointed

B. D. Claffey, General Malleable Corp., Waukesha, Wis., National Membership Committee Vice-Chairman.

Vice President Herbert Simpson as chairman of the national committee. Mr. Simpson, being a Scotchman of the first water, accepted the challenge and in turn appointed Director B. D. Claffey, vice chairman, and the following individuals as members of this committee:

H. S. Simpson, National Engineering Co., Chicago, *Chairman*
B. D. Claffey, General Malleable Corporation, Waukesha, Wis., *Vice Chairman*
R. J. Allen, Worthington Pump & Machinery Co., Harrison, N. J.
E. H. Ballard, General Electric Co., West Lynn, Mass.
W. Carter Bliss, Scullin Steel Co., St. Louis, Mo.
James C. Burt, Burt Foundry Co., Toledo, Ohio
Geo. W. Cannon, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.
Glenn Coley, Detroit Edison Co., Detroit, Mich.
Walter A. Dorsey, Alloy Cast Steel Co., Marion, Ohio
M. F. Doty, Clark Equipment Co. Buchanan, Mich.
J. E. Eppley, Kinney Iron Works, Los Angeles, Calif.
Franklin Farrell III, Farrel-Birmingham Co., Ansonia, Conn.
F. Ray Fleig, Smith Facing & Supply Co., Cleveland, O.
Rufus Harrington, Hunt-Spiller Mfg. Co., South Boston, Mass.
E. W. Horlebein, Gibson & Kirk Co., Baltimore, Md.
I. L. Johnson, Pacific Steel Casting Co., Berkeley, Calif.
Thomas Kaveny, Sr., Herman Pneumatic Machine Co., Pittsburgh, Pa.
R. J. Keeley, Ajax Metal Co., Philadelphia, Pa.
Nathan Lesser, Deere & Co., Moline, Ill.
J. McCallum, McCallum Hatch Bronze Co., Buffalo, N. Y.
H. F. McFarlin, Lunkenheimer Co., Cincinnati, O.
W. O. McMahon, Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.
A. O. Nilles, Griffin Wheel Co., Kansas City, Kas.
P. A. Paulson, Gunite Foundries Corporation, Rockford Ill.
G. P. Phillips, International Harvester Co., Chicago, Ill.
D. F. Seyferth, West Michigan Steel Foundry Co., Muskegon, Mich.
D. M. Storie, Fittings Ltd., Oshawa, Ontario
I. R. Wagner, Electric Steel Castings Co., Indianapolis, Ind.
H. S. Washburn, Plainville Castings Co., Plainville, Conn.
Frank Wheeler, Kimman & Wheeler, Syracuse, N. Y.
Lee C. Wilson, Reading Steel Casting Div., of American Chain & Cable Co., Inc., Reading, Pa.
S. V. Wood, Minneapolis Electric Steel Castings Co., Minneapolis, Minn.
Walton L. Woody, National Malleable & Steel Castings Co., Sharon, Pa.
A. C. Ziebell, Universal Foundry Co., Oshkosh, Wis.

The chapter officers and Mr. Simpson's committee have been active. Over 300 new members have been credited to the goal of 5,000 members.

A useful trophy, which is described elsewhere in these pages, will be presented by Chairman

Trophy to be presented by National Membership Chairman Simpson to Chapter winning the contest. A cast product, the bell is 7 inches high, 8 inches in diameter at the base with an overall height of 11 inches.

Simpson to the chapter which on June 30, 1941, has scored the largest number of points. The chapter leading each month will have the honor of having its name engraved on the trophy and we hope it will be possible for them to have the use of it for calling their next monthly meeting to order. However, the monthly winner can retain the trophy only as long as it leads the pack. The Chesapeake chapter, formed last month, has the honor of having its name appear as number one on the trophy. Opposite we show the chapter standings in points as of November 30. Chapters will be able to keep their own respective scores by using the figures shown at the bottom of the chapter standing.

The membership will be kept informed through the pages of this periodical during the progress of the drive. Those individuals who are not members of the Association and who receive a copy of this month's *American Foundryman* should give serious consideration to the opportunities afforded by a membership in the American Foundrymen's Association and the local chapter.

New Members Enrolled in Chapters
From July 1 to November 30, 1940

Place	Chapter	Sustaining	Company	Affiliate	Personal	Associate	New Members	Total Points
1st	Chesapeake (New)	1	4	19	5	0	29	735
2nd	Central New York	1	0	25	0	0	26	475
3rd	Metropolitan	0	2	12	3	0	17	370
3rd	Wisconsin	0	2	12	3	0	17	370
4th	Northeastern Ohio	0	2	9	4	0	15	355
5th	Cincinnati	0	4	7	0	0	11	305
6th	Southern California	0	1	8	4	0	13	290
7th	Western New York	0	2	8	1	0	11	250
8th	Birmingham	0	1	11	1	0	13	245
9th	Chicago	0	0	8	3	1	12	225
10th	Ontario	0	2	3	1	0	6	175
11th	Michiana	0	1	5	1	0	7	155
11th	Detroit	0	1	5	1	0	7	155
12th	St. Louis	0	0	2	4	0	6	150
13th	Northern California	0	0	5	2	0	7	135
14th	Philadelphia	0	0	3	2	0	5	105
15th	Central Indiana	0	0	3	1	0	4	75
16th	No. Illinois-So. Wisconsin	0	1	1	0	0	2	65
17th	Quad-City	0	0	3	0	0	3	45
		2	23	149	36	1	211	4680

Points Awarded on Memberships

Sustaining	100	Personal	30
Company	50	Affiliate and Associate	15

Charter Members of the A. F. A.

WITH the Association having reached its 45th year, it is interesting to note that 25 members joining in 1896, the year of the organization of the Association, have maintained their membership continuously over these years.

Of these, two are individuals, both past presidents and honorary members of the Association, W. H. McFadden and A. T. Waterfall. Mr. McFadden served as 10th president in 1906-07, while he was vice president of McIntosh-Hemphill & Co., Pittsburgh. Mr. Waterfall was 13th president, serving in 1909-10 while connected with the Russell Steel & Foundry Co., Detroit. Mr. Waterfall still resides in Detroit. Mr. McFadden has his permanent address at New Orleans, La. Along similar lines with this idea is a further note of interest in that these charter member companies have provided the Association with six presidents, Stanley G. Flagg, Jr. (deceased), of Stanley G. Flagg & Co., serving in 1907-08; A. O. Backert (deceased), of the Penton Publishing Co., serving in 1918-19; Sam T. Johnston (deceased), of the S. Obermayer Co., serving in 1928-29; E. H. Ballard of the General Electric Co., serving in 1931-32; Gen. T. S. Hammond of the Whiting Corp., serving in 1932-33, and Dan M. Avey of the Penton Publishing Co., serving two terms in 1934-36. The Association is pleased to acknowledge its indebtedness to these individuals and companies who have so faithfully supported the work of the Association and the industry which it serves.

Opposite are the names of these companies, with the name of the individual of the firm who at present exercises the membership privileges. Of those members in whose names the company memberships are now held, John Hill of the Hill & Griffith Co. is the only member who was recorded as having attended the organization meeting of the Association in Philadelphia in 1896.

C. S. Bell Co., Hillsboro, O. (V. Bell, Treas.).
Whiting Corp., Harvey, Ill. (R. E Prussing, Vice Pres).
Tabor Mfg. Co., Philadelphia, Pa. (R. M. Maull, Treas.)
Pittsburgh Rolls Corp., Pittsburgh, Pa. (Q. S. Snyder, Pres.).
Stanley G. Flagg & Co., Philadelphia, Pa. (S. Griswold Flagg III).
Crane Co., Chicago, Ill. (V. P. Rumely, Works Mgr.)
General Electric Co., Lynn, Mass.
Malleable Iron Fittings Co., Branford, Conn. (A. H. Jameson, Mgr., Casting Sales).
Jarecki Mfg. Co., Erie, Pa. (Chas. Jarecki, Fdry. Supt.)
Penton Publishing Co., Cleveland, O. (Frank G. Steinebach, Editor, *The Foundry).*
S. Obermayer Co., Chicago, Ill. (O. C. Olson).
New England Butt Co., Providence, R. I. (John G. Aldrich, Pres. & Gen. Mgr.)
J. S. McCormick Co., Pittsburgh, Pa. (H. T. Herr, Jr., Pres.)
Pickands Mather & Co., Cleveland, O. (Wm. M. Ramsey, Met.)
Hill & Griffith Co., Cincinnati, O. (John Hill).
Whitin Machine Works, Whitinsville, Mass. (Raymon F. Meader).
Western Foundry Co., Chicago, Ill. (D. A. Cullinan, Gen. Mgr.).
St. Paul Foundry Co., St. Paul, Minn. (F. S. Power, Pres.).
Westinghouse Air Brake Co., Wilmerding, Pa. (Hugo Hautman, Supt. of Fdries.).
Brown & Sharpe Mfg. Co., Providence, R. I. (Wm. A. Vial, Vice Pres.).
Whitehead Bros. Co., New York, N. Y. (A. J. Miller, Pres.).
Syracuse Chilled Plow Co., Syracuse, N. Y. (L. E. Hall, Asst. Supt.).
R. D. Wood Co., Philadelphia, Pa. (S. P. Hazard)

Compact Chronology of A.F.A.

The line drawings of individuals used as illustrations in this issue, and particularly in this chronology were made in 1905 and appeared in Vol. 14, The Journal (later Transactions), American Foundrymen's Association. The individuals shown were instrumental in the advancement of the Association and the Industry.

Organization Meeting
June 12, 1896

Meetings—Manufacturers' Club and Franklin Institute, Philadelphia
Officers Elected
Pres.—Francis Schumann
Vice-Pres.—F. W. Gibby, Robert G. Taylor, Henry Clay Evans, John M. Sweeney, W. S. Mosher, Irving Scott, Joseph Best
Sec'y—John A. Penton
Treas.—Howard Evans
Membership—345
Attendance—345
Papers—8
Constitution drawn up and adopted.

1897

Meetings—Harmonie Hall, Detroit
Officers Elected
Pres.—Francis Schumann
Vice-Pres.—W. E. Sessions, I. N. Frank, E. H. Putnam, C. S. Bell, C. J. Wolff, W. S. Mosher
Sec'y—John A. Penton
Treas.—Howard Evans
Membership—486
Attendance—177
Exhibitors—24
Papers—9
Constitution amended, Committee on Apprentice Training appointed.

1898

Meetings—Convention Hall, Grand Hotel, Cincinnati
Officers Elected
Pres.—C. S. Bell
Vice-Pres.—C. L. Newcomb, I. N. Frank, E. H. Putnam, C. A. Bauer, C. J. Wolff, W. S. Mosher
Sec'y—John A. Penton
Treas.—Howard Evans
Membership—566
Attendance—287
Papers—12
Committee for standards on test bars appointed. Committee for standardizing chemical analysis appointed.

1899

Meetings—Club Rooms of the Monongahela House, Pittsburgh
Officers Elected
Pres.—J. S. Seaman
Vice-Pres.—A. W. Walker, Dr. Richard Moldenke, J. P. Golden, C. A. Bauer, W. A. Jones, W. S. Mosher, R. Chartrey, Joseph Best
Sec'y—John A. Penton
Treas.—Howard Evans
Membership—310
Papers—9
American Foundrymen's Association standardizing bureau formed. Bureau supplied standard samples of cast iron to chemists. Later turned over to Bureau of Standards and was origination of this service of the Bureau.

1900

Meetings—Great Northern Hotel, Chicago
Officers Elected
Pres.—W. A. Jones
Vice-Pres.—George B. Buckingham, William Yagle, J. P. Golden, John A. Penton, William Ferguson, W. S. Mosher, R. Chartrey, T. J. Best
Sec'y—Dr. Richard Moldenke
Treas.—Howard Evans
Membership—341
Papers—9

1901

Meetings—Seventy-fourth Regiment, N.Y.N.G. Armory, Buffalo
Officers Elected
Pres.—J. G. Sadlier
Vice-Pres.—T. H. Colin, Walter F. Prince, S. D. Sleeth, C. A. Bauer, E. W. Smith, E. P. Gilmour, J. P. Golden, T. J. Best
Sec'y—Dr. Richard Moldenke
Treas.—Thomas D. West

Thomas D. West, ninth Association president, accepting nomination at the 1905 New York Convention.

Membership—297
Attendance—195
Papers—13
Committee on uniform methods of making chemical tests on cast and pig iron appointed. Proposed standard specifications for gray iron castings drawn up.

1902

Meetings — Huntington Hall and Massachusetts Institute of Technology, Boston
Officers Elected
Pres.—Arthur W. Walker
Vice-Pres.—J. F. Lanigan, J. A. Beckett, F. H. Zimmers, A. I. Findley, C. J. Wolff, Adam W. Bair, J. P. Golden, T. J. Best
Sec'y—Dr. Richard Moldenke
Treas.—Willis Brown
Membership—314
Attendance—241
Papers—12
Committee on specifications for steel castings, and committee on insuring patterns appointed. Chemical section of A.F.A. organized. Affiliation of Associated Foundry Foremen with A.F.A. First A.F.A. paper on metallurgy of cast iron presented.

1903

Meetings—Club Room of the Hotel Pfister, Milwaukee
Officers Elected
Pres.—Willis Brown
Vice-Pres.—John Magee, J. A. Beckett, John McLaren, A. K. Beckwith, C. J. Wolff, Adam W. Bair, J. P. Golden, T. J. Best
Sec'y-Treas.—Dr. Richard Moldenke
Membership—317
Attendance—243
Papers—22
Appoints committee on foundry practice. Metallurgical section of The Journal published. First A.F.A. paper containing micrographs presented.

1904

Meetings—Claypool Hotel, Indianapolis, Ind.
Officers Elected
Pres.—C. J. Wolff
Vice-Pres.—E. W. Anthony, John Mills, D. J. Thomas, A. K. Beckwith, H. E. Diller, T. W. Sheriffs, J P. Golden, T. J. Best
Sec'y-Treas.—Dr. Richard Moldenke
Membership—278
Attendance—157
Papers—25
Journal of the Association enlarged. Committee on hardness of molds appointed. Committee on standard specifications for coke appointed. Pig iron specifications changed.

1905

Meetings—Grand Central Palace and Columbia University, New York
Officers Elected
President—Thomas D. West
Vice-Pres.—Harry A. Carpenter, H. Van Atta, A. V. Slocum, A. K. Beckwith, David Spence, Adam W. Bair, J. P. Golden, T. J. Best
Sec'y-Treas.—Dr. Richard Moldenke
Membership—294
Attendance—262
Papers—19
Standard method for the determination of silicon in pig and cast iron recommended.

1906

Meerings—Central Armory, Cleveland
Officers Elected
Pres.—W. H. McFadden
Vice-Pres.—C. J. Caley, John W. Burr, Stanley G. Flagg, Jr., J. H. Whiting, W. J. Keep, Thomas W. Sheriffs, J. P. Golden, L. L. Anthes
Sec'y-Treas.—Dr. Richard Moldenke
Membership—300
Attendance—582
Papers—28
Exhibitors—42
American Foundrymen's Supply Association organized. First organized exhibit held. Committee appointed to study the effect of nickel on cast iron. Committee on

cost finding appointed. The Journal changed to Transactions.

1907

Meetings—Second Regiment Armory, Philadelphia
Officers Elected
Pres.—Stanley G. Flagg, Jr.
Vice-Pres.—C. J. Caley, John W. Burr, H. E. Field, J. H. Whiting, A. K. Beckwith, T. W. Sheriffs, J. P. Golden, L. L. Anthes
Sec'y-Treas.—Dr. Richard Moldenke
Membership—532
Attendance—1,391
Papers—34
Exhibitors—75
Standard methods for the determination of graphitic and total carbon, manganese, sulphur and phosphorus recommended. American Brass Founders' Association organized, which later became Institute of Metals Div. A.I.M.E. Committee on accident prevention appointed.

1908

Meetings—Exhibition Park, Toronto, Canada
Officers Elected
Pres.—L. L. Anthes
Vice-Pres. — F. B. Farnsworth, William H. Parry, H. E. Field, J. W. Jeffrey, Samuel T. Johnson, T. W. Sheriffs, J. W. Kissick, R. J. Cluff
Sec'y-Treas.—Dr. Richard Moldenke
Membership—715
Attendance—1,500
Papers—33
Exhibitors—62
Resolution passed to abolish the grading of pig iron by numbers and substitute chemical analysis as the governing factor and committee appointed to work with a similar committee of the American Society of Testing Materials to this end. Committee appointed to investigate accidents in foundries.

1909

Meetings—Music Hall, Cincinnati
Officers Elected
Pres.—Arthur T. Waterfall
Vice-Pres. — F. B. Farnsworth, Walter Wood, Joseph T. Speer, Eugene W. Smith, T. W. Sheriffs, A. E. Howell, William Gilbert, A. N. W. Clare
Sec'y-Treas.—Dr. Richard Moldenke
Membership—724
Attendance—2,000
Papers—18
Exhibitors—68
Committee on analysis of brass and kindred alloys appointed. Standard specifications for buying foundry pig iron adopted.

1910

Meetings — Michigan State Fair Grounds, Detroit
Officers Elected
Pres.—Major Joseph T. Speer
Vice-Pres. — F. B. Farnsworth, Walter Wood, W. A. Bole, William Gilbert, J. J. Wilson, T. W. Sheriffs, A. E. Howell, A. N. W. Clare
Sec'y-Treas.—Dr. Richard Moldenke
Membership—753
Attendance—2,000
Papers—18
Exhibitors—84
Coke specifications suggested. Program committee appointed.

1911

Meetings—Western Pennsylvania Exposition Society, Pittsburgh
Officers Elected
Pres.—Major J. T. Speer
Vice-Pres. — F. B. Farnsworth, H. D. Miles, Walter Wood, A. E. Howell, R. A. Bull, T. W. Sheriffs, G. R. Lombard, S. B. Chadsey
Sec'y-Treas.—Dr. Richard Moldenke
Membership—692
Attendance—2,000
Papers—47
Exhibitors—112
First bound volumes of the Transactions appeared. Adopted standard methods for determining the constituents of foundry coke. Committee appointed to suggest uniform report form for chemical analysis.

1912

Meetings — Broadway Exposition Building and Hotel Statler, Buffalo
Officers Elected
Pres.—H. D. Miles
Vice-Pres. — F. B. Farnsworth, T. L. Richmond, Walter Wood, A. E. Howell, R. A. Bull, T. W. Sheriffs, G. R. Lombard, S. B. Chadsey
Sec'y-Treas.—Dr. Richard Moldenke
Membership—626
Attendance—3,000
Papers—30
Exhibitors—105
Committee appointed to change constitution and by-laws. Committee on standardization of core binders appointed. Name of the American Brass Foundrymen's Association changed to the American Institute of Metals during the year.

1913

Meetings—International Amphitheatre and LaSalle Hotel, Chicago
Officers Elected
Pres.—Alfred E. Howell
Vice-Pres.—R. A. Bull, H. A. Carpenter, S. B. Chadsey, G. R. Lombard, T. L. Richmond, T. W. Sheriffs, J. J. Wilson, Walter Wood

Dr. Moldenke, second Association secretary, 1900-1912, under whose guidance the Association grew stronger and larger.

Sec'y-Treas.—A. O. Backert
Membership—715
Attendance—Large
Papers—40
Exhibitors—158
Joseph S. Seaman given silver loving cup by the Association. Committee on steel foundry shop standards appointed. Cost committee reappointed. Committee on safety reappointed. Committee on papers and programs appointed.

1914

Meetings—LaSalle Hotel and International Amphitheatre, Chicago
Officers Elected
Pres.—R. A. Bull
Vice-Pres.—H. E. Field, Henry Carpenter, Walter Wood, T. W. Sheriffs, A. T. Drysdale, J. J. Wilson, A. H. Thomas, Ben D. Fuller
Sec'y-Treas.—A. O. Backert
Membership—760
Attendance—Large
Papers—40
Exhibitors—137
Committee on specifications for foundry scrap appointed. Constitution amended. Committee on international meeting appointed.

1915

Meetings—Young's Million Dollar Pier, Atlantic City.
Officers Elected
Pres.—R. A. Bull
Vice-Pres.—J. P. Pero, Henry A. Carpenter, S. B. Chadsey, A. T. Drysdale, H. E. Field, B. D. Fuller, W. A. Janssen, H. B. Swan, A. H. Thomas, Walter Wood
Sec'y-Treas.—A. O. Backert
Membership—996
Attendance—"Largest attendance of any convention thus far"
Papers—36
Exhibitors—108
Uniform cost system approved. Committee on specifications for malleable castings appointed. Committee on specifications for steel castings appointed.

1916

Meetings—Hotel Statler, Cleveland
Officers Elected
Pres.—J. P. Pero
Vice-Pres.—Benjamin D. Fuller
Sec'y-Treas.—A. O. Backert
Membership—974
Attendance—1,083
Papers—54
Exhibitors—146
American Foundrymen's Association is incorporated. Takes over exhibition of equipment and supplies.

1917

Meetings—Paul Revere and Talbot Halls, Boston
Officers Elected
Pres.—Benjamin D. Fuller
Vice-Pres.—S. Griswold Flagg, III
Sec'y-Treas.—A. O. Backert
Membership—1,017
Attendance—1,000
Papers—49
Exhibitors—156
Resolutions passed to aid the government during the war.

1918

Meetings — Milwaukee Auditorium, Milwaukee

Officers Elected
Pres.—A. O. Backert
Vice-Pres.—W. A. Janssen
Sec'y-Treas.—C. E. Hoyt
Membership—1,072
Attendance—1,056
Papers—53
Exhibitors—194
Foundry industry pledges itself to aid the government in the successful completion of the war. Foundry industry called upon to render service by chairman of the U. S. shipping board. Meeting dominated by problems of the industry in the war.

1919

Meetings—Bellevue-Stratford Hotel, Philadelphia
Officers Elected
Pres.—C. S. Koch
Vice-Pres.—W. R. Bean
Sec'y-Treas.—C. E. Hoyt
Membership—1,103
Attendance—3,000
Papers—54
Exhibitors—214
Problems of reconstruction feature meeting. Committee appointed to study sulphur problems.

1920

Meetings—State Fairgrounds, Columbus, Ohio
Officers elected
Pres.—W. R. Bean
Vice-Pres.—C. R. Messinger
Sec'y-Treas.—C. E. Hoyt
Membership—1,633
Attendance—3,800
Papers—59
Exhibitors—241
New plan of meetings used. Need for research work stressed. Subject of standardizing patterns for steel foundries placed within the scope of the committee on steel foundry standards. Special committee appointed on pattern standardization. John A. Penton, J. S. Seaman, W. H. McFadden and J. H. Whiting present endowments of $5,000 each to Association and the S. Obermayer Co. presented $1,000 for awards for meritorious work in the foundry field. Foundry sand research fund started.

1922

Meetings — Assembly Hall and Municipal Museum Building, Rochester, N. Y.
Officers Elected
Pres.—C. R. Messinger
Vice-Pres.—G. H. Clamer
Sec'y-Treas.—C. E. Hoyt
Membership—1,456
Attendance—3,672
Papers—56
Exhibitors—178
First international exchange papers presented. Committee appointed to study corrosion of metals. Changes recommended for specifications for by-product coke, pig iron and high test cast iron. Policy of definite cooperation with A.S.T.M. approved.

1923

Meetings—Hollenden Hotel, Cleveland
Officers Elected
Pres.—G. H. Clamer
Vice-Pres.—L. W. Olson
Sec'y-Treas.—C. E. Hoyt
Ass't Sec'y—R. E. Kennedy
Membership—1,560
Attendance—4,000
Papers—63
Exhibitors—214
Committees on refractories and on heat treatment of ferrous castings appointed during the year. American Foundrymen's Association invited to be guests of the Association Technique de Fondrie de France at an International Foundrymen's congress the next year.

1924

Meetings — Milwaukee Auditorium, Milwaukee
Officers Elected
Pres.—L. W. Olson
Vice-Pres.—A. B. Root, Jr.
Sec'y-Treas.—C. E. Hoyt
Ass't Sec'y—R. E. Kennedy
Membership—1,622
Attendance—5,000
Papers—62
Exhibitors—218
Committee on non-ferrous metals appointed during the year. Sand research and apprentice training feature the program. Committee on international relations appointed during the year. American Foundrymen's Association recommends American Society for Testing Materials specifications for chilled cast iron wheels, foundry pig iron,

John Hill, Hill & Griffith, Cincinnati, as he appeared in 1905. Mr. Hill has attended every convention of A.F.A., including the organization meeting.

high test gray iron castings and cast iron pipe and special castings. Enrique Touceda awarded John A. Penton medal. John Howe Hall awarded J. H. Whiting medal. First National Apprentice Contest held.

1925

Meetings—New York State Fair Grounds, Syracuse, N. Y.
Officers Elected
Pres.—A. B. Root, Jr.
Vice-Pres.—S. W. Utley
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—1,754
Attendance—3,500
Papers—45
Exhibitors—187
Richard Moldenke awarded Joseph S. Seaman medal. Robert John Anderson awarded William H. McFadden medal. By-laws of the Association changed. International test bar for cast iron recommended. First round table meetings held. Joint committee on Foundry Refractories with American Ceramic Society formed.

1926

Meetings — Michigan State Fairgrounds, Detroit
Officers Elected
Pres.—S. W. Utley
Vice-Pres.—S. T. Johnston
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—2,180
Attendance—6,069
Papers—65
Exhibitors—267
Thomas Turner, England, awarded Seaman medal. John Shaw, England, awarded Penton medal. E. V. Ronceray, France, awarded Whiting medal. Second international foundrymen's congress held.

1927

Meetings—Edgewater Beach Hotel, Chicago
Officers Elected
Pres.—S. W. Utley
Vice-Pres.—S. T. Johnston
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—2,330
Attendance—1,354
Papers—36
First non-exhibit convention since 1906. Committee appointed to study the effect of the use of scrap in the blast furnace on the quality of pig iron. R. A. Bull awarded Seaman medal.

1928

Meetings—Philadelphia Commercial Museum and Bellevue-Stratford Hotel, Philadelphia
Officers Elected
Pres.—S. T. Johnston
Vice-Pres.—Fred Erb
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—2,365
Attendance—7,000
Papers—62
Exhibitors—239
First exhibit of castings. First shop operation courses held. Preparations made for 1929 International Foundry Congress. Standard cost systems of the various trade associations approved. Alexander E. Outerbridge awarded McFadden medal.

1929

Meetings—Stevens Hotel, Chicago
Officers Elected
Pres.—Fred Erb
Vice-Pres.—N. K. B. Patch
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—2,365
Attendance—4,000
Papers—43
Exhibitors—154
By-laws amended. Resolution decrying excessive room entertainment during conventions passed by Board of Directors. Transactions of Association to be published to all members monthly. Philadelphia Research Fund established. Appropriation made for study of clay bond properties. Prizes awarded for best papers presented at convention. Jesse L. Jones awarded Seaman medal. First Regional meeting held. Divisions of A.F.A. formed.

1930

Meetings—Public Auditorium, Cleveland
Officers Elected
Pres.—N. K. B. Patch
Vice-Pres.—E. H. Ballard
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—2,477
Attendance—8,000
Papers—39
Exhibitors—292
H. A. Schwartz awarded Penton

medal. Association to support Alloys of Iron Research. Committee on Research Appropriations appointed. Research on liquid shrinkage, factors affecting surface qualities of steel castings and on test bar and liquid shrinkage of nonferrous alloys continued or begun.

1931

Meetings—Stevens Hotel, Chicago
Officers Elected
Pres.—E. H. Ballard
Vice-Pres.—T. S. Hammond
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—2,368
Attendance—3,000
Papers—45
Exhibitors—174

W. J. Keep, Detroit, Mich., answering questions relating to the classification of pig iron by fracture.

Arrangements made for permanent foundry exhibits in industrial museums. Title of monthly magazine changed from "Transactions and Bulletin of A.F.A." to "Transactions of A.F.A." R. S. MacPherran awarded Whiting medal. Symposium on Malleable Cast Iron Castings held in conjunction with A.S.T.M.

1932

Meetings—Statler Hotel, Detroit
Officers Elected
Pres.—T. S. Hammond
Vice-Pres.—Frank J. Lanahan
Executive Sec'y-Treas.—C. E. Hoyt
Technical Secretary—R. E. Kennedy
Membership—1,907
Attendance—700
Papers—35
Symposium on Steel Castings held, jointly sponsored by A.F.A. and A.S.T.M. District foundrymen's meetings held in Philadelphia, Pittsburgh, Chicago and Seattle. Work on "Cast Metals Handbook" begun. Penton medal presented to L. W. Spring and McFadden medal awarded Dr. H. W. Gillett. Non-exhibit convention.

1933

Meetings—Stevens Hotel, Chicago
Officers Elected
Pres.—Frank J. Lanahan
Vice-Pres.—D. M. Avey
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec.—R. E. Kennedy
Membership—1,496
Attendance—2,000
Papers—33
Exhibitors—73
Conferences for discussion of National Industrial Recovery Act. Symposium on Cast Iron, jointly sponsored by A.F.A. and A.S.T.M. presented. Symposium on Electric Power Costs in the Foundry held. Dr. G. H. Clamer awarded the Seaman medal. By-laws revised to allow formation of local Chapters. A.F.A. medalists made Honorary Life Members.

1934

Meetings—Public Auditorium, Philadelphia
Officers Elected
Pres.—D. M. Avey
Vice-Pres.—B. H. Johnson
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—1,239
Attendance—3,500
Papers—40
Exhibitors—104
Fifth International Foundry Congress. Chicago Chapter organized, the first chapter under the new By-laws. Simplified Practices of the Bureau of Standards for Cupola Refractories approved.

1935

Meetings—Royal York Hotel, Toronto, Canada
Officers Elected
Pres.—D. M. Avey
Vice-Pres.—B. H. Johnson
Exec. Sec'y-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Membership—1,360
Attendance—1,000
Papers—38
Publication, in conjunction with National Founders' Association, of "Standards of Four-Year Foundry Apprenticeship." Publication of "Cast Metals Handbook." Establishment of Safety and Hygiene Section. Organization of Chapters in Northeastern Ohio (Cleveland), Metropolitan - Philadelphia and Quad Cities (Moline, East Moline, Rock Island, Ill., and Davenport, Iowa). L. L. Anthes awarded Penton medal. Work on Alloy Cast Iron volume begun. Non-exhibit convention.

1936

Meetings—Convention Hall, Detroit
Officers Elected
Pres.—James L. Wick, Jr.
Vice-Pres.—H. Bornstein
Exec. Sec'y.-Treas.—C. E. Hoyt
Tech. Sec'y—R. E. Kennedy
Ass't Sec'y—J. Reininga
Director, Safety and Hygiene—E. O. Jones
Membership—2,014
Attendance—5,500
Papers—32
Exhibitors—220
Detroit, Milwaukee, St. Louis, Northern California and Birmingham Chapters organized. Dr. H. Ries awarded Seaman medal and David McLain the Whiting medal. Policies and Activities Committee appointed. Research on sand properties at high temperatures approved. Preparation on a treatise on steel castings design approved. Convention theme, "Rebirth of the Foundry Industry."

1937

Meetings—Milwaukee Public Auditorium and Schroeder Hotel, Milwaukee, Wis.
Officers Elected
Pres.—H. Bornstein
Vice-Pres.—Marshall Post
Exec. Vice.-Pres.—C. E. Hoyt
Sec'y-Treas.—D. M. Avey
Tech. Sec'y—R. E. Kennedy
Ass't Sec'y—J. Reininga
Ass't Tech. Sec'y—N. F. Hindle
Dir., Safety and Hygiene—E. O. Jones
Membership—2,355
Attendance—10,000
Papers—59
Exhibitors—212
Southern California and Buffalo Chapters formed. John W. Bolton awarded Penton medal; Chas. W. Briggs, McFadden medal; Dr. Jas. T. MacKenzie, Whiting medal. Apprentice memberships considered. Four regional conferences held. Two recommended good practices published by Safety and Hygiene Division. Publications policy revised.

1938

Meetings—Cleveland Public Auditorium, Cleveland, Ohio
Officers Elected
Pres.—Marshall Post
Vice-Pres.—H. S. Washburn
Exec. Vice-Pres.—C. E. Hoyt
Sec'y—R. E. Kennedy
Treas.—E. O. Jones
Dir., Safety and Hygiene—E. O. Jones
Tech. Sec'y—N. F. Hindle
Ass't Sec'y-Treas.—J. Reininga
Membership—2,953
Attendance—11,000
Papers—62
Exhibitors—209
First fall technical conference held. Seven regional conferences held. Metropolitan, Northern Illinois-Southern Wisconsin and Ontario Chapters formed. Fourth edition of "Testing and Grading Foundry Sands and Clays" published. By-laws revised. Decision to hold exhibits biennially instead of annually. First annual Board of Awards lecture presented. Seaman medal awarded to F. A. Lorenz, Jr.

1939

Meetings—Hotel Gibson, Cincinnati
Officers Elected
Pres.—H. S. Washburn
Vice-Pres.—L. N. Shannon
Exec. Vice-Pres.—C. E. Hoyt
Sec'y—R. E. Kennedy
Tech. Sec'y—N. F. Hindle
Treas. and Dir., Safety and Hygiene—E. O. Jones
Ass't Sec'y-Treas.—J. Reininga
Membership—3,139
Attendance—2,000
Papers—68
Michiana, Central New York, and Cincinnati District Chapters formed. Nine regional conferences held. Cupola Research project initiated. Alloy Cast Irons book published. First annual convention lecture course held and book "The Microscope in Elementary Cast Iron Metallurgy" published. Patternmaking Apprentice Stand-

(Continued on Page 17)

Foundrymen to Meet in New York City

NEW YORK CITY, one of the leading business, financial and industrial centers in the world, will welcome the thousands of American foundrymen who will convene in that city May 12 to 15 for their forty-fifth annual convention. Headquarters for the convention will be the Hotel Pennsylvania located on Seventh avenue across from the Pennsylvania railroad station.

The 1941 convention will be patterned after the successful 1939 convention, held in Cincinnati, where the meetings were devoted entirely to the consideration of technical phases of castings production. The plans at present show that the sectional program committees of the American Foundrymen's Association are busily planning an unusually interesting and extensive series of papers and committee reports relating to the technical and practical problems in the gray iron, steel, malleable and non-ferrous branches of the foundry industry.

According to the plans, which as yet are strictly tentative, the malleable and non-ferrous sessions will be held on Monday and Tuesday, May 12 and 13; with the gray iron and steel meetings being held the following two days. Attention will be directed to the two shop operation courses dealing with various production programs and will include sand and cupola operation. As at the previous conventions, round table discussions and luncheons will be scheduled where men can exchange information that is directly connected with their practice problems. Placed throughout the schedule of convention sessions will be general sessions concerning refractories, job evaluation and time study, costs, apprentice training, foreman training, safety and hygiene and plant and plant equipment.

The forty-fifth annual meeting will welcome the first session sponsored by the newly formed Patternmaking Division.

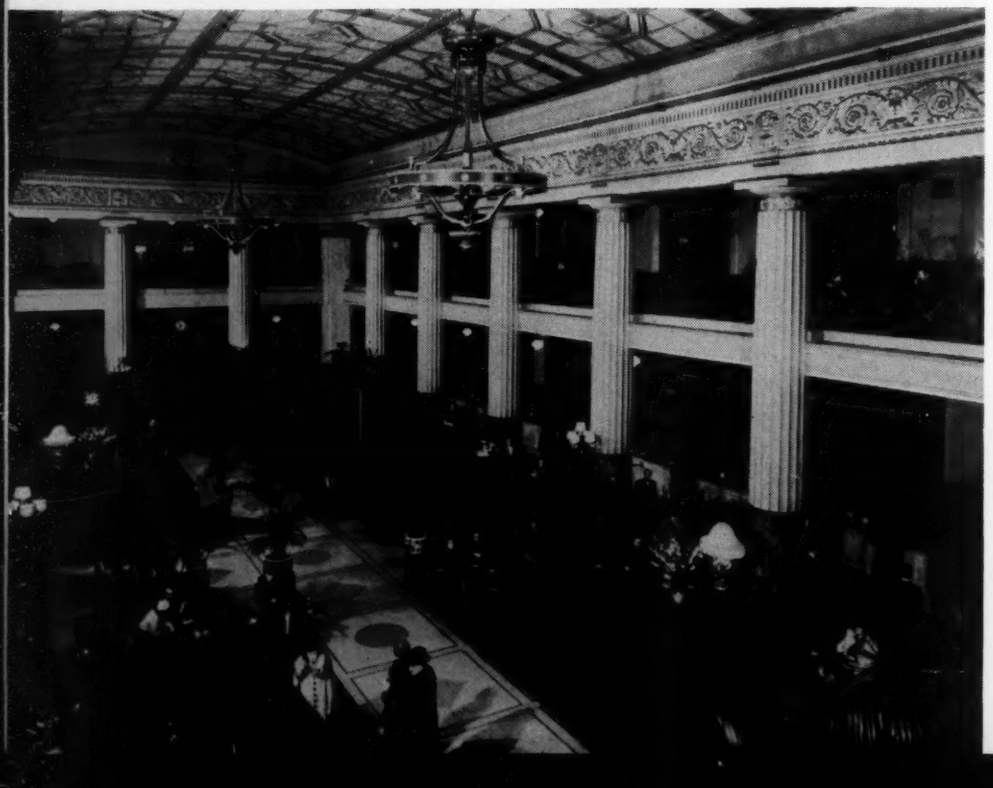
The featured lecture course speaker for this convention, as arranged by the A.F.A. Convention Lecture Course Committee, is H. W. Dietert, Harry W. Dietert Co., Detroit, Mich. Mr. Dietert, 1940 A.F.A. medal winner, will deliver a series of lectures on "Coremaking." Material for these lectures is being compiled by leaders in the sectional fields of the foundry industry.

The numerous features that will take place during the convention week, including the plant visitation program and the ladies' entertainment program, will be under the direction of numerous committees of the Metropolitan chapter. At the present time those committees have not been appointed by the chapter, but will be shortly. R. J. Allen, Worthington Pump & Machinery Corp., Harrison, N. J., is chairman of the Metropolitan chapter, while the other offices are held by J. W. Reid, Robbins Conveying Belt Co., Passaic, N. J., vice chairman; W. A. Phair, The Journal of Commerce, New York, secretary; and R. E. Nesbitt, Pratt Institute, Brooklyn, N. Y., treasurer. Sam Tour, Lucius Pitkin, Inc., New York, is general chairman of the chapter convention committee. In helping to stage the 1941 annual meeting, the Metropolitan chapter will have the active support and co-operation of the Philadelphia chapter and of the recently formed Chesapeake chapter.

Ample facilities are provided in the Hotel Pennsylvania for the many activities of Annual Foundrymen's Week. Meeting rooms on the ballroom floor, where registration headquarters also will be maintained, will be ample to meet the needs of the technical sessions. In addition, rooms will be provided in other parts of the hotel for round table luncheons and similar features of the program. Ladies' registration also will be handled in the Hotel Pennsylvania.

Night scene of Rockefeller Center.

Hotel Pennsylvania lobby where foundrymen will meet during Annual Foundrymen's Week.



After the first of the year, the Association will mail to members the usual hotel reservation blank form. This form will include the rates charged by the day or the week for various types of accommodations. Directions for proper procedure in making room reservations also will be given on this form.

There will be no shortage of accommodations as New York is well known for its ample hotel facilities. The city has over 400 hotels equipped with every contrivance that can contribute to the comfort of the guest.

The convention committee on plant visitation will make special arrangements with local industrial plants for group tours during the four-day meeting. The members must keep in mind that certain foundry plants may be closed to public inspection due to government work. However, with the numerous manufacturing companies located in and around New York City, connected with the foundry industry, it can be expected that the committee will arrange trips that will be enjoyable and beneficial.

The A.F.A. Committee on Apprentice Training, as announced in the November issue of *American Foundryman*, again will stage a national apprentice contest in gray iron, steel and non-ferrous molding and pattern-making. Local competitions will be held by various A.F.A. chapters and in individual plants. From these local contests, the winning castings or patterns will be sent to New York where the national contest will be held. Winners in the four fields will receive cash awards of $40, $25 and $15, respectively, for first, second and third; and each will be given an engraved certificate.

Foundry Operating at Science Museum

THE Museum of Science and Industry, Chicago, Ill., recently completed and opened for inspection its many industrial and scientific exhibits that were unfinished during the Chicago Regional Conference last year.

The Foundry Exhibit, which the Chicago chapter helped to establish in the museum last year, is now operating on the average of four days during the week. The schedule of operation includes Saturdays, Sundays and holidays. The foundry also is operated other days when groups on inspection tours warrants its running.

The Foundry Exhibit is not scheduled to operate during the week but is manned when a group of sufficient size, not less than 25 persons, tours the museum and wishes to see it operate. Under such conditions plant groups, foundrymen or metallurgists wishing to see the Foundry Exhibit operate, during the course of their tour through the museum, should make arrangements with the museum through A. C. Carlton, curator of geology and mineral industries, Museum of Science and Industry.

The building is open to visitors from 10 a. m.-4 p. m. on Mondays through Fridays; Saturdays, Sundays and holidays from 10 a. m.-6 p. m.

Sub-committee to Study Sintering Test

DURING the past year, attention of the Foundry Sand Research Committee has been directed to the fact that no standard method existed for interpreting the results of tests designed to determine the sintering point of foundry sands. This condition has made it difficult to check results between laboratories and plants. Certain criticisms also have arisen concerning the testing apparatus.

To correct these conditions, a Subcommittee on Sintering Test has been appointed whose function is "to determine the proper technique and outline the possible pitfalls in the performance of the sintering test, together with a complete investigation as to the accuracy of the present test and, if necessary, suggest revisions to increase its accuracy."

The following are the members of the committee:

Chairman — J. B. Caine, Sawbrook Steel Castings Co., Lockland, O.

H. W. Dietert, Harry W. Dietert Co., Detroit, Mich.

W. G. Reichert, American Brake Shoe & Foundry Co., Mahwah, N. J.

C. M. Saeger, Jr., National Bureau of Standards, Washington, D. C.

H. F. Taylor, Naval Research Laboratory, Washington, D. C.

L. B. Osborn, Houghland & Hardy, Inc., Evansville, Ind.

The committee is desirous to know the experience of members and companies who conduct the sintering test, and to have any comments on the results obtained. Communications should be addressed either to the chairman at Sawbrook Steel Castings Co., Lockland, Ohio, or to the Assistant Secretary of the Association.

Compact Chronology of A. F. A.

(Concluded from Page 15)

ards approved. McFadden medal awarded to D. J. Campbell; Penton medal to H. S. Falk; J. R. Allan, the Whiting medal.

1940

Meetings — International Ampitheatre, Chicago, Ill.

Officers Elected
Pres.—L. N. Shannon
Vice-Pres.—H. S. Simpson
Exec. Vice-Pres.—C. E. Hoyt
Sec'y—R. E. Kennedy
Treas.—C. E. Hoyt
Ass't Sec'y—N. F. Hindle
Dir., Safety and Hygiene—E. O. Jones
Ass't Treas.—J. Reininga

Membership—3,388
Attendance—16,000
Papers—40
Exhibitors—216

Best and most enthusiastic convention yet held. Central Indiana Chapter organized. Nine regional meetings held. Museum of Science & Industry, Chicago, foundry exhibit dedicated. Patternmaking division formed. Committee on Cooperation with Engineering Schools becomes National Committee. Cupola Research Committee organized. Recommended good safety practices for the Protection of Workers in Foundries published. First chapter chairman meeting held. Apprentice memberships approved. N. K. B. Patch awarded Penton medal; F. K. Vial, Whiting medal; H. W. Dietert, McFadden medal; F. A. Melmoth, Seaman medal.

Recommended Gating Terms

FOR years efforts have been made periodically to standardize the terms used in the various operations in the foundry. Colloquialisms, the use of terms indiscriminately, and often the different meanings for the same term, have added to the confusion. You have all had the experience of listening to a discussion on a method of gating or risering and finding in the end that the discussers were talking about the same thing, but using different terms. Even the technical literature, which should be the last word in accuracy if all are to understand it, is not immune to these difficulties of interpretation due to the interchangeable use of terms.

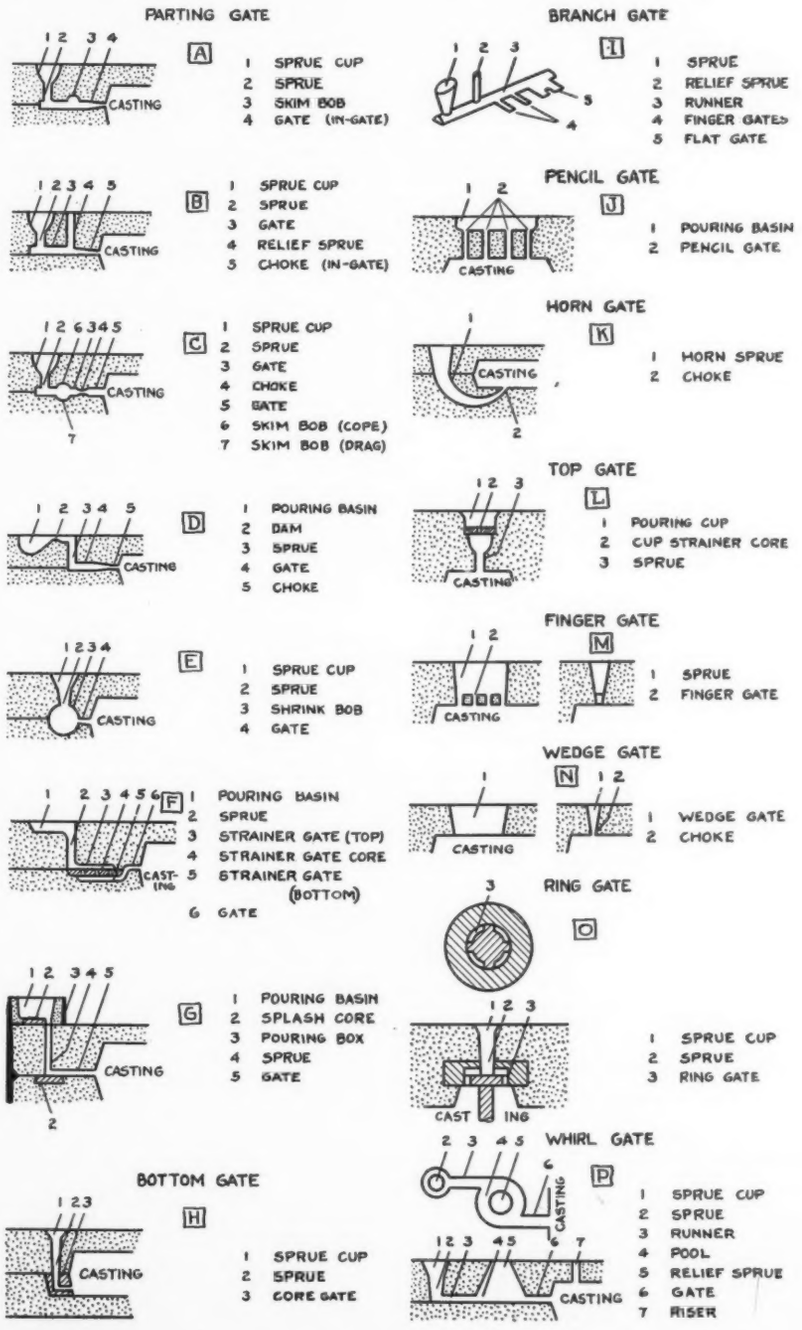
In an endeavor to solve the difficulty, a Committee on Nomenclature was appointed by the A. F. A. and in 1932, its Subcommittee on Gating Terms brought in a report. Membership of the subcommittee was as follows: H. W. Dietert, Harry W. Dietert Co., Detroit, Mich., Chairman; Pat Dwyer, *The Foundry,* Cleveland, Ohio; E. M. Handley, Chain Belt Co., Milwaukee, Wis.

The report was based on a survey of the industry. Sketches of various types of gating were sent to a list of representative foundries with a request that they designate the terms that were applied to the various portions of gating systems in their plants. The replies of some 40 foundries were summarized in the report and were used as a guide by the committee in recommending nomenclature to be applied to the various parts of the different systems.

The terms recommended in the report were selected as being those most commonly used in practice and also the most descriptive. For example, the term "sprue" was selected as a proper term in preference to "down gate" and others inasmuch as the latter term would be so similar to the recommended term "in gate." Another example is the selection of the term "sprue cup" to designate the ordinary cupped sprue mouth in preference to such suggested terms as "pouring basin," "basin," and "pouring dish," to eliminate any possibility of using a term that would be similar to the recommended term "pouring basin."

The accompanying illustration shows the nomenclature recommended by the subcommittee for the various types of gating arrangements. Possibly there are other arrangements of gating that have come into vogue since this report was published. Readers are requested to look over the illustrations on this page and, if they so desire, to submit, not only other gating methods with suggested nomenclature, but criticisms of the designations shown.

Those interested in the summary of the survey results will find the complete report of the subcommittee on pages 510-514, *Transactions,* American Foundrymen's Association, vol. 40 (1932).



Illustrations of nomenclature as recommended by the subcommittee for various types of gating arrangements.

A Method for Securing Cores in Cast Iron Shell Molds

SINCE the inauguration of the present National Defense Program, many foundrymen have been interested in how the industry could assist the Government directly in that program. One of the thoughts in the minds of many, who had experience in producing material during the past World War, was the large number of cast shell made during that period.

They knew that the Allies, as well as the Triple Entente, were using large numbers of cast shell. The French were forced to use cast shell because the large majority of their steel producing units were in the hands of the enemy. However, they had developed the production of cast iron shell before the war so that once the necessity arrived, they could meet it.

Advantage of Cast Shell

In fact, the French found many advantages to the use of modern cast shell as is shown in a paper presented by Lieut. Col. Martinon of the French Army at the 1918 convention of A.F.A.[1] The advantages were from the viewpoint of general defense problems and were given as follows:

1. More simple in every way.
2. Any well-managed foundry can be used for the purpose.
3. Erection of a plant for semisteel (high strength cast iron) shell is much more rapid and less expensive than the erection of a plant for steel shell.
4. Use of existing foundries spread over the whole country made the labor problem more simple.
5. The output of a plant for semisteel (high strength cast iron) shell manufacture can be increased very rapidly.
6. Materials which are used in manufacture are less expensive and can be easily procured.
7. Cost is less.
8. Cost of coal for a ton of manufactured semisteel (high strength cast iron) shell is notably lower than for a ton of steel shell.

The term "semisteel" now is no longer recognized and in its stead is used "high strength" but, from the general viewpoint, it appears that these same advantages exist today even as they did in World War No. 1.

Because of the renewed interest on the part of foundrymen in cast shell manufacture, it might be well to review not only the requirements which such shell had to meet in 1918 but also the manufacturing methods then used. With regard to the latter, the great strides made in foundry practice and the development of better equipment probably would change the manufacturing procedure considerably from that used in those times. However, such a review may indicate to some foundrymen methods for overcoming difficulties which are now, or which may in the future, confront them.

Efficiency and Safety Factors

In papers presented before the A.F.A. during 1917 and 1918 it is stated that the efficiency of a high strength cast iron shell depends upon the resistance of the envelope when the projectile arrives at the target, upon the explosive ratio and the fragmentation. The explosive ratio is the ratio of the weight of the explosive contained in the shell to the total weight of the loaded and primed shell. Against earthworks, it has been shown by numerous experiments that the effects of bursting are nearly independent of the envelope and depend only upon the weight of the explosive. On the other hand, the envelope should not break due to shock on arriving at the target, as this would cause a misfire or an incomplete burst. Shells fired against troops should explode so that as many fragments as possible, weighing more than 2 grams, are obtained. The requirements for safety in handling and firing high strength cast iron shell are that the envelope should resist the effects of shock at the moment of firing, that it should be airtight, and that the interior surface of the shell should be totally without unevenness or rough places.

With metal of proper composition, the fragmentation of high strength cast iron shell was satisfactory in 1918. French experiments have shown that a good high strength cast iron shell bursts so that 55 per cent of the fragments weigh more than 5 grams.

Molding Methods

Three general molding methods are discussed in the references given as applicable to the production of cast shells: (1) Green sand, (2) dry sand, and (3) permanent molds. Because of the fact that the green sand molding process is most widely used of the three in this country, it is probably the one in which there is the most interest. For those interested, it is suggested that they review the methods used during the past World War as outlined in a paper[2] presented by the late H. Cole Estep at the 1918 convention and prepared under the auspices of the U. S. Government Semisteel Shell Committee on Manufacturing Practice.

For those interested in shell manufacture in permanent molds, they are referred to a paper presented in 1917 by Edgar A. Custer[3]. This paper outlines methods that were used

[1]Martinon, Lieut. Col., *"French Semisteel Shell Manufacturing Practice," Transactions,* American Foundrymen's Association, vol. 28, pp. 118-131 (1918).

[2]Estep, H. Cole, *"Preliminary Report on Manufacture of Semisteel Shell in American Foundries," Transactions,* American Foundrymen's Association, vol. 27, pp. 71-117 (1918).

[3]Custer, Edgar A., *"Cast Iron Shells in Permanent Molds," Transactions,* American Foundrymen's Association, vol. 26, pp. 105-121 (1917).

successfully in that period for the production of cast iron shell, including the theory of the cast iron shell, manufacturing methods for the mold, mold design, etc.

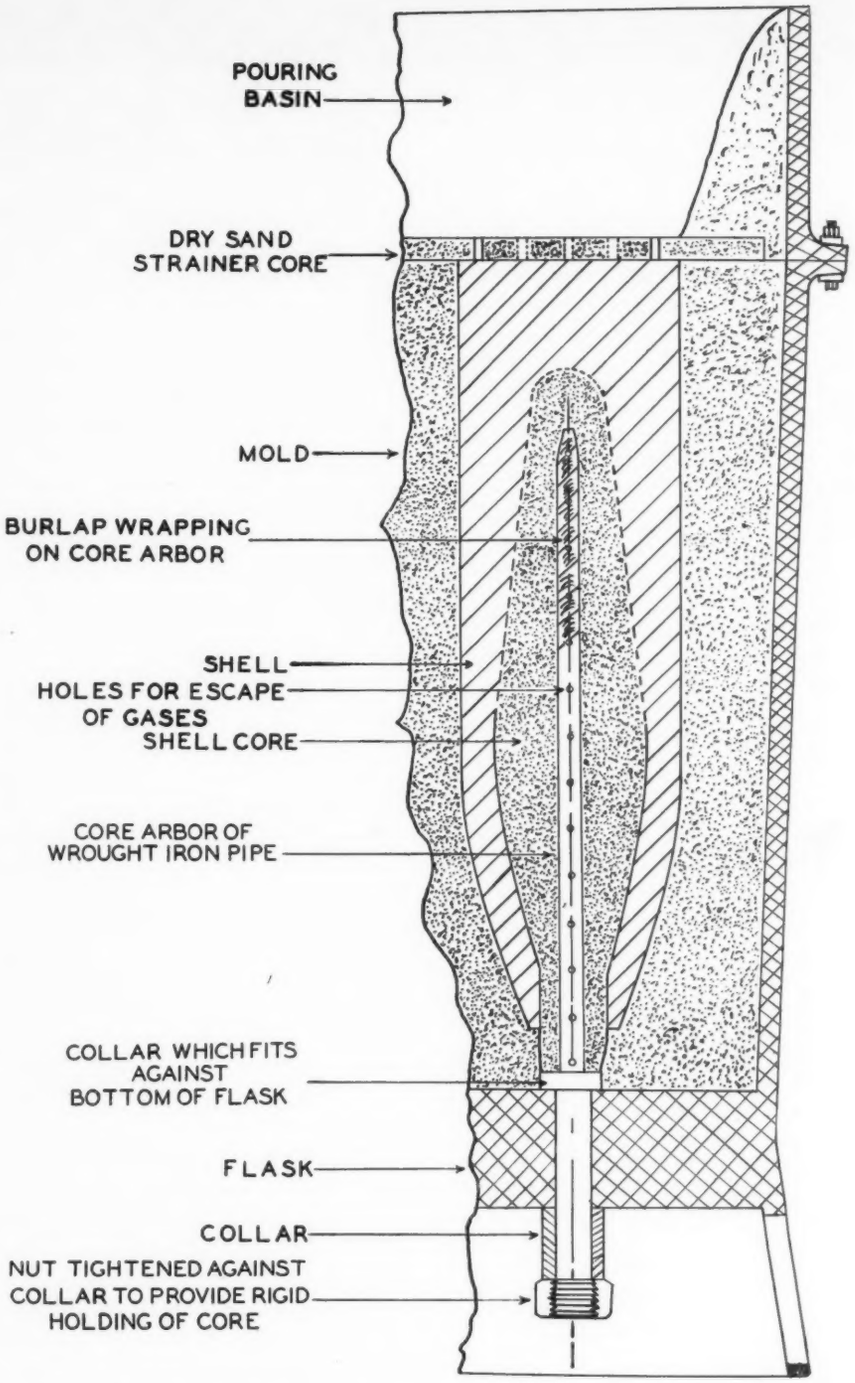
Regardless of the method of production used, one of the most important problems is the manufacture and method of holding the core rigidly in the mold. Needless to say, any shell, regardless of the material from which it is made, must be perfect. In the manufacture of cast iron shells, a slight shifting of the core would endanger the wall thickness of the shell. Thus to make perfect shells, among other things, the core must be in perfect alignment.

Core Practice

During the first World War, it was recommended that cast iron shell be made in cast iron flasks of special design to accommodate the manufacture of four shells in a mold. A section of such a mold is shown in the accompanying illustration. This sketch shows the core and arbor in position in the mold and the location of the shell casting. The approximate method of bolting the core in position also is shown. It should be noted that the arbor is wrapped with burlap strips about 3-in. wide to provide a surface to which the sand can cling. The arbor itself is made of wrought iron pipe, or some similar material, and is provided with 3/16-in. holes throughout its length for the escape of gases.

Metal is introduced into the mold through a pouring basin at the top, which serves as a cope. A strainer core is placed on top of the mold cavity and the pouring basin mounted on the core in somewhat the manner shown.

The shell is molded in such a way that the casting stands vertically in the mold. For this type production, it was suggested, in the report, that the best method of ramming was by jarring. The flasks were so designed and rammed that it was not necessary to roll-over the flask or in any way disturb the mold after the mold was rammed and the patterns withdrawn. The patterns were made with considerable draft so that they could be removed from the mold easily. The core was placed in the mold from the top and anchored in position at the bottom of the flask by means of a nut on the threaded end of the arbor which is drawn tight against a collar, as illustrated. This method holds the core rigidly in position.



Sketch of shell casting mold showing the core and arbor in position in the mold and the location of the shell casting. Note the holes for escape of gases and burlap wrapping used as a surface to which the sand can cling.

It should be noted that this method of production was not the only one mentioned in the report; it was the one recommended as the most economical and the one with which best results had been obtained.

While the accompanying sketch may not be exact in all details, it gives some idea of the methods used in the past to produce cast iron shell and particularly illustrates the method used to secure the core in position.

NEW MEMBERS

Birmingham Chapter

R. E. Green, Core Foreman, American Cast Iron Pipe Co., Birmingham, Ala.

Central New York Chapter

Donald Loomis, Foreman, Goulds Pump, Inc., Seneca Falls, N. Y.
*Morris Machine Works, Baldwinsville, N. Y. (Frank Holmes, Fdry. Supt.)
H. Louis Purdy, Whitesboro, N. Y., Salesman, North American Refractories Co., Cleveland, O.

Chesapeake Chapter

Paul O. Ady, Leadingman, U. S. Naval Gun Factory, Washington, D. C.
*American Brake Shoe & Foundry Co., Baltimore, Md. (W. H. Holtz, Supt.)
George G. Auguste, Quarterman, U. S. Naval Gun Factory, Washington, D. C.
Frederick G. Bruggman, Sales Engr., Gibson & Kirk Co., Baltimore, Md.
James E. Crown, Master Mechanic, U. S. Naval Gun Factory, Washington, D. C.
L. H. Denton, Baltimore Association of Commerce, Baltimore, Md.
*A. B. Farquhar Co., Ltd., York, Pa. (Everett E. Smith, Fdry. Mgr.)
J. Millson Graham, Waynesboro, Pa., Salesman, Ajax Metal Co., Philadelphia, Pa.
*Wm. C. Robinson & Son Co., Baltimore, Md. (C. M. Whedbee)
Harry S. Schweinsberg, Baltimore, Md., Sales Repr., Harbison-Walker Refractories Co., Pittsburgh, Pa.
Milford Smith, Leadingman, U. S. Naval Gun Factory, Washington, D. C.
Joseph H. Young, Leadingman, U. S. Naval Gun Factory, Washington, D. C.

Chicago Chapter

John J. Barta, Chicago, Ill.
Professor R. G. Bigelow, Technological Institute, Northwestern University, Evanston, Ill.
Howard Cohen, Apprentice, Ace Metal Co., Chicago, Ill.
Gerald Golden, Apprentice, Western Foundry Co., Chicago, Ill.
C. H. Lungren, Park Ridge, Ill., Sales, Milwaukee Foundry Equipment Co., Milwaukee, Wis.
Brian L. Mitchell, Teacher, Crane Technical High School, Chicago, Ill.
Dominick Restus, Apprentice, Washburne Trade School, Chicago, Ill.
Arthur Speer, Apprentice, Chicago Steel Foundry, Chicago, Ill.
John F. Wisniewski, Apprentice, Link-Belt Co., Chicago, Ill.

Cincinnati Chapter

E. B. Cooper, Sales, Ingersoll-Rand Co., Cincinnati, Ohio

Detroit Chapter

J. Edward Coon, Fdry. Metallurgist, Packard Motor Car Co., Detroit, Mich.
Herbert E. Jones, Inspector, Pontiac Motor Co., Pontiac, Mich.
John D. Stoner, Engineer, Stoner-Maurer Co., Monroe, Mich.

Metropolitan Chapter

J. F. Beers, Supt., American Brake Shoe & Foundry Co., Mahwah, N. J.
John S. Dyer, Molder, Wheaton Brass Works, Newark, N. J.
James Edward Fifield, Metallurgical Ass't, American Brake Shoe & Foundry Co., Mahwah, N. J.

Northeastern Ohio Chapter

Robert Dalton, Metallurgist, Atlantic Foundry Co., Akron, Ohio
Wallace Grossman, Sales, Manufacturers Supply Co., Cleveland, Ohio
George Kirby, Sales, Manufacturers Supply Co., Cleveland, Ohio
Mel G. Leypoldt, Manufacturers Supply Co., Cleveland, Ohio
*Manufacturers Supply Co., Cleveland, Ohio (Ed. M. Leypoldt, President)
Carl Monahan, Sales, Manufacturers Supply Co., Cleveland, Ohio
*United Engineering & Foundry Co., Canton, Ohio (Stephen L. Feduska)
William James Weir, Foreman, Atlantic Foundry Co., Akron, Ohio
Frank Weisehan, Metallurgist, Ferro Machine & Foundry Co., Cleveland, Ohio
Walter Francis Zippler, Engineer, Zippler Tuyere Systems, Rocky River, Ohio

Northern California Chapter

E. J. Dickman, Salesman & Sash Wt. Fdry. Mgr., Enterprise Foundry Co., San Francisco, Calif.
Harry Leas, Foreman, Vulcan Foundry Co., Oakland, Calif.
E. J. Lonn, Mgr., Pneumatic Tool Dept., Ingersoll-Rand Co., San Francisco, Calif.
Edw. G. Petherick, District Mgr., Norton Co., San Francisco, Calif.

Quad-City Chapter

Spencer Phillips, Metallurgist, International Harvester Co., Rock Island, Ill.

St. Louis Chapter

Don Z. Farrington, Pattern Maker, Key Company, Granite City, Ill.

Southern California Chapter

John F. Beson, Melter, Kinney Iron Works, Los Angeles, Calif.
Frank Cacioppo, Molder, Kinney Iron Works, Los Angeles, Calif.
*Eld Metal Co. Ltd., Los Angeles, Calif. (A. R. Layer, President)
Fred Ochoa, Molder, Kinney Iron Works, Los Angeles, Calif.
John Pulice, Coreroom Foreman, Kinney Iron Works, Los Angeles, Calif.
Michael R. Pulice, Coremaker, Kinney Iron Works, Los Angeles, Calif.
Harold G. Thomas, Molder, Kinney Iron Works, Los Angeles, Calif.
P. H. Turner, Pattern Stge. Clerk, Kinney Iron Works, Los Angeles, Calif.

Western New York Chapter

Frank E. Bates, Worthington Pump & Machinery Corp., Buffalo, N. Y.
Arthur H. Bond, Rochester, N. Y., Repr., W. W. Sly Mfg Co., Cleveland, Ohio
Erwin W. Deutschlander, Fdry. Inspector, Worthington Pump & Machinery Corp., Buffalo, N. Y.
Archie McKaig, Buffalo, N. Y., Sales Repr., Michigan Metal Abrasive Co., Jackson, Mich.
Vance I. Mandeville, Fdry. Supt., Weil-McLain Co., Erie, Pa.
John A. Shaw, Development Engr., International Graphite & Electrode Corp., Niagara Falls, N. Y.
*Standard Buffalo Foundry, Inc., Buffalo, N. Y. (F. T. McQuillin, Supt.)
*Weil-McLain Co., Erie, Pa. (E. H. Maeder, Supt.)

Wisconsin Chapter

Stewart Hagen, Sales, Delta Oil Products Co., Milwaukee, Wis.
*R. E. Locher & Schefrin Co., Milwaukee, Wis. (S. Schefrin)
*Modern Equipment Co., Port Washington, Wis. (M. Goldberg, President)
Erve Rathlesberger, Delta Oil Products Co., Milwaukee, Wis.
A. R. Tooman, Mgr., Gray Iron Div., Lakeside Malleable Castings Co., Racine, Wis.
*Wisconsin Aluminum Foundry Co., Inc., Manitowoc, Wis. (William Eck, Secretary)

Outside of Chapter

Frank B. Mahoney, Works Mgr., Ellwood Co., Ellwood City, Pa.

*Company Members

Chapter Directory

Chicago Chapter

Meetings—2nd Monday, Monthly.
Place—Chicago Towers Club, Chicago, Ill.
Chairman—G. P. Phillips, International Harvester Co.
Vice-Chairman—L. L. Henkel, Interlake Iron Corp.
Secretary—B. L. Simpson, National Engineering Co.
Treasurer—C. C. Kawin, C. C. Kawin Co.
Directors—H. K. Briggs, Miller & Co.
H. W. Johnson, Northwestern Foundry Co.
J. J. Fox, Wisconsin Steel Co.
W. C. Packard, National Engineering Co.
B. J. Aamodt, National Malleable & Steel Castings Co.
J. H. Abbott, Hickman, Williams & Co.
L. F. Lottier, Peoples Gas, Light & Coke Co.
L. H. Rudesill, Griffin Wheel Co.
H. A. Forsberg, Continental Roll & Steel Foundry Co., East Chicago, Ind.
M. J. Lefler, Western Foundry Co.
T. J. Magnuson, J. S. McCormick Co.
C. E. Westover, Burnside Steel Foundry Co.

Northeastern Ohio Chapter

Meetings—2nd Thursday, Monthly.
Place—Cleveland Club, Cleveland, Ohio.
President—F. Ray Fleig, Smith Facing & Supply Co.
Vice-President—F. J. Dost, Sterling Foundry Co., Wellington.
Secretary—B. F. Lambert, Diamond Alkali Co.
Treasurer—R. F. Lincoln, Osborn Mfg. Co.
Directors—S. N. Farmer, Sand Products Corp.
F. J. Opatrny, F. B. Stevens, Inc.
B. G. Parker, Youngstown Foundry & Machine Co., Youngstown.
Marcel Reymann, Atlantic Foundry Co., Akron.
S. P. Schloss, Superior Foundry Co.
Wm. J. Feth, Forrest City Foundries Co.
E. J. Hedlund, Urick Foundry Co., Erie, Pa.
J. C. Maher, Ohio Foundry Co.
L. P. Robinson, Werner G. Smith Co.
F. A. Stewart, National Malleable & Steel Castings Co.
Wm. E. Goebert, Bowler Foundry Co.
J. G. Goldie, Cleveland Trade School.
E. F. Hess, Ohio Injector Co., Wadsworth.
W. O. Larson, W. O. Larson Foundry Co., Grafton.
J. H. Tressler, Hickman, Williams & Co.

Quad City Chapter

Meetings—3rd Monday, Monthly.
Place—Rotate between Moline, Rock Island and East Moline, Ill., and Davenport, Iowa.
Chairman—Nathan Lesser, Deere & Co., Moline, Ill.
Vice-Chairman—A. H. Putnam, A. H. Putnam Co., Rock Island.
Secretary-Treasurer—J. Morgan Johnson, Tri-City Manufacturers' Assn., Moline.
Directors—H. Bornstein, Deere & Co., Moline, Ill.
Frank W. Wells, J. I. Case Co., Rock Island.
F. O. Gorman, John Deere Spreader Works, East Moline.
P. T. Bancroft, Moline.
E. C. Wussow, Williams-White & Co., Moline.
J. H. Ploehn, French & Hecht, Inc., Davenport, Iowa.
A. E. Hageboeck, Frank Foundries Corp., Moline.
L. E. Roby, Peoria Malleable Castings Co., Peoria, Ill.
Ray Wendland, International Harvester Co., Rock Island.

Detroit Chapter

Meetings—3rd Thursday, Monthly
Place—Detroit Leland Hotel, Detroit, Mich.
Chairman—Glenn Coley, Detroit-Edison Co.
Vice-Chairman—V. A. Crosby, Climax Molybdenum Co.
Secretary—A. H. Allen, "The Foundry."
Treasurer—Wm. W. Bowring, F. B. Stevens, Inc.
Directors—R. B. Crawford, Atlas Foundry Co.
F. J. Walls, International Nickel Co.
A. L. Boegehold, General Motors Research Div.
F. A. Melmoth, Detroit Steel Casting Co.
A. J. Gonter, Chrysler Corp.
R. G. McElwee, Vanadium Corp. of America.
J. H. Crawley, Pontiac.
Howard McCoy, Cadillac Motor Car Co.
H. W. Dietert, Harry W. Dietert Co.
O. L. Allen, Pontiac Motor Co., Pontiac.
Otto E. Goudy, Kelsey-Hayes Wheel Co.
E. L. Morrison, Budd Wheel Co.

St. Louis District Chapter

Meetings—2nd Thursday, Monthly.
Place—DeSoto Hotel, St. Louis, Mo.
Chairman—W. Carter Bliss, Scullin Steel Co.
Vice-Chairman—L. J. Desparois, Pickands, Mather & Co.
Secretary-Treasurer—J. W. Kelin, Federated Metals Div., A. S. & R. Co.
Directors—L. J. Filstead, John C. Kupferle Foundry Co.
R. K. Durkan, M. W. Warren Coke Co.
G. S. Haley, Century Foundry Co.
C. H. Morken, Carondelet Foundry Co.
L. C. Farquhar, American Steel Foundries, Granite City, Ill.
A. O. Nilles, Griffin Wheel Co., N. Kansas City, Kans.
Webb Kammerer, Midvale Mining & Mfg. Co.
L. E. Everett, Key Co.
Walter Zeis, Midwest Foundry Supply Co.
C. B. Shanley, Semi-Steel Casting Co.
George Mitsch, American Car & Foundry Co.
C. E. Rothweiler, Hickman, Williams & Co.

Philadelphia Chapter

Meetings—2nd Friday, Monthly.
Place—Engineers' Club, Philadelphia, Pa.
Chairman—R. J. Keeley, Ajax Metal Co.
Vice-Chairman—H. Reitinger, U. S. Pipe & Foundry Co., Burlington, N. J.
Secretary-Treasurer—W. B. Coleman, W. B. Coleman & Co.
Directors—Lee Harris, Link Belt Co.
John H. S. Spencer, H. W. Butterworth & Sons.
M. R. Taggart, Taggart & Co.
John M. Robb, Jr., Hickman, Williams & Co.
Douglas J. Peake, Florence Pipe Foundry & Machine Co., Florence, N. J.
J. T. Fegley, North Bros. Mfg. Co.
W. C. Hartman, Bethlehem Steel Co., Bethlehem.

Wisconsin Chapter

Meetings—3rd Friday, Monthly.
Place—Schroeder Hotel, Milwaukee, Wis.
President—B. D. Claffey, General Malleable Corp., Waukesha.
Vice-President—A. C. Ziebell, Universal Foundry Co., Oshkosh.
Secretary—Howard Waldron, Nordberg Mfg. Co., Milwaukee.
Treasurer—R. F. Jordan, Sterling Wheelbarrow Co., Milwaukee.
Directors—W. J. MacNeill, Federal Malleable Corp., West Allis.
Ray Flansburg, Belle City Malleable Iron Co., Racine.
Harry Donald, Interstate Supply & Equipment Co., Milwaukee.
Harry Ladwig, Allis-Chalmers Mfg. Co., West Allis.
T. E. Ward, Badger Malleable & Mfg. Co., South Milwaukee.
David Zuege, Sivyer Steel Casting Co., Milwaukee.
Fred Pritzlaff, Falk Corp., Milwaukee.

Northern California Chapter

Meetings—2nd Friday, Monthly
Place—Rotate between San Francisco, Berkeley and Oakland, Calif.
Chairman—I. L. Johnson, Pacific Steel Casting Co., Berkeley.
Vice-Chairman—E. M. Welch, American Manganese Steel Co., Oakland.
Secretary-Treasurer—G. L. Kennard, Northern California Foundrymen's Institute, San Francisco.
Directors—A. W. Allen, San Francisco Stove Work, San Francisco.
Harry A. Bossi, H. C. Macaulay Foundry Co., Berkeley.
J. D. Fenstermacher, Columbia Steel Co., San Francisco.
Frank R. Geis, Metallurgical Laboratories, San Francisco.
John S. Fowler, Pacific Foundry Co., San Francisco.
J. L. Francis, Vulcan Foundry Co., Oakland.
B. C. Page, F. K. Simonds Co., Oakland.
P. C. Valentine, Del Monte Properties Co., San Francisco.

Birmingham District Chapter

Meetings—3rd Friday, Monthly.
Place—Tutwiler Hotel, Birmingham, Ala.
Chairman—W. O. McMahon, Sloss-Sheffield Steel & Iron Co.
Vice-Chairman—J. A. Bowers, American Cast Iron Pipe Co.
Secretary-Treasurer—D. L. Booker, National Cast Iron Pipe Co.
Directors—R. R. Deas, Jr., American Cast Iron Pipe Co.
W. E. Curran, Republic Steel Corp.
C. B. Saunders, Tennessee Coal Iron & R. R. Co.
H. A. Newbury, Newbury Mfg. Co., Talladega.
A. S. Holberg, Alabama Clay Products Co.
R. L. Ogden, Stockham Pipe Fittings Co.
H. J. Noble, American Cast Iron Pipe Co.
W. Carson Adams, Adams, Rowe & Norman.
G. E. Jones, U. S. Pipe & Foundry Co., Bessemer.
Geo. M. Morrow, Jr., Goslin-Birmingham Mfg. Co.

Western New York Chapter

Meetings—1st Friday, Monthly
Place—Hotel Touraine, Buffalo, N. Y.
Chairman—John McCallum, McCallum-Hatch Bronze Co.
Vice-Chairman—R. K. Glass, Republic Steel Corp.
Secretary—Eliot Armstrong, Inter-Allied Foundries.
Treasurer—V. L. Whitehead, Jr., Whitehead Bros. Co.
Directors—Jos. Mayer, Lumen Bearing Co.
John Reid, Symington Gould Corp., Rochester.
J. P. Begley, Pratt & Letchworth Co.
Alex Rankin, Lake Erie Engineering Corp.
R. D. Loesch, Lake Erie Foundry Co.
Jos. Kaufman, Harrison Division, General Motors Corp., Lockport.
W. J. Corbett, Atlas Steel Casting Co.

Southern California Chapter

Meetings—4th Thursday, Monthly.
Place—Hotel Hayward, Los Angeles.
President—Jas. E. Eppley, Kinney Iron Works, Los Angeles.
Vice-President—B. G. Emmett, Los Angeles Steel Casting Co., Los Angeles.
Secretary—W. F. Haggman, Foundry Specialties Co., Huntington Park.
Treasurer—Earl Anderson, Enterprise Foundry Co., Los Angeles.
Directors—Pasquale Arpea, Axelson Mfg. Co., Los Angeles.
J. G. Eberhardt, Kay-Brunner Steel Products, Inc., Alhambra.
Thomas J. McGraw, Jas. E. McGraw & Son, Brea.
R. J. Crichton, American Brake Shoe & Foundry Co., Los Angeles.
James O'Hara, Fraters Valve & Fittings Co., Los Angeles.
A. M. Barker, Barker Foundry Supply Co., Los Angeles.
H. E. McGowan, H. E. McGowan Co., Los Angeles.
A. G. Zima, International Nickel Co., Los Angeles.
W. D. Bailey, Pacific Metals Co.

Metropolitan Chapter

Meetings—1st Wednesday, Monthly
Place—Essex House, Newark, N. J.
Chairman—R. J. Allen, Worthington Pump & Machinery Co., Harrison, N. J.
Vice-Chairman—J. W. Reid, Robins Conveying Belt Co., Passaic, N. J.
Secretary—W. A. Phair, "Journal of Commerce," New York City.
Treasurer—R. E. Nesbitt, Pratt Institute, Brooklyn, N. Y.
Directors—G. Hochgesang, American Brake Shoe & Foundry Co., Mahwah, N. J.
T. D. Parker, Climax Molybdenum Co., New York City.
Sam Tour, Lucius Pitkin, Inc., New York City.
W. C. Schulte, Rutgers University, New Brunswick, N. J.
K. A. DeLonge, International Nickel Co., New York City.
K. V. Wheeler, American Steel Casting Co., Newark, N. J.
H. G. Lamker, Wright Aeronautical Corp., Paterson, N. J.
D. Polderman, Jr., Whiting Corp., New York City.
N. E. Woldman, Eclipse Aviation Corp., Bendix, N. J.
W. E. Day, Mack Mfg. Co., New Brunswick, N. J.

Northern Illinois-Southern Wisconsin Chapter

Meetings—2nd Tuesday, Monthly
Place—Rotate between Rockford and Freeport, Ill., and Beloit, Wis.
Chairman—P. A. Paulson, Gunite Foundries Corp., Rockford.
Secretary-Treasurer—R. W. Mattison, Mattison Machine Works, Rockford.
Technical Secretary—J. R. Cochran, Foundry Div., Sundstrand Machine Tool Co., Rockford.
Directors—W. L. Davey, W. L. Davey Pump Co., Rockford.
H. F. Halverson, Beloit Foundry Co., Beloit, Wis.
C. M. Dale, Liberty Foundries Co., Rockford.
Eli Johnson, Greenlee Bros. & Co., Rockford.
Harry J. Wade, Fairbanks Morse & Co., Beloit, Wis.
John T. Clausen, Greenlee Bros. & Co., Rockford.
G. J. Landstrom, Sundstrand Machine Tool Co., Rockford.
C. V. Nass, Fairbanks Morse & Co., Beloit, Wis.
F. N. Rundquist, Beloit Iron Work, Beloit, Wisconsin.

Ontario Chapter

Meetings—Last Friday, Monthly
Place—Royal York Hotel, Toronto, and Rock Garden Lodge, Hamilton.
Chairman — D. M. Storie, Fittings, Ltd., Oshawa.
Vice-Chairman—N. B. Clarke, Steel Co. of Canada, Hamilton.
Secretary-Treasurer—G. L. White, Westman Publications, Ltd.
Directors—O. W. Ellis, Ontario Research Foundation, Toronto.
W. R. Barnes, W. R. Barnes & Co., Hamilton.
J. J. McFadyen, Galt Malleable Iron Co., Galt.
John Thwaites, Beatty Bros., Ltd., Fergus.
John Reid, Canadian Westinghouse Co., Ltd., Hamilton.
C. C. MacDonald, F. B. Stevens, Inc., Toronto.
J. C. Stavert, Babcock-Wilcox & Goldie-McCulloch, Ltd., Galt.
N. C. MacPhee, McKinnon Industries, Ltd., St. Catharine.
T. A. Rice, International Harvester Co., Hamilton.

Michiana Chapter

Meetings—1st Tuesday, Monthly.
Place—Hotel LaSalle, South Bend, Ind.
Chairman—M. F. Doty, Clark Equipment Co., Buchanan, Mich.
Vice-Chairman—E. C. Bumke, Oliver Farm Equipment Co., South Bend.
Secretary-Treasurer—L. L. Andrus, American Foundry Equipment Co., Mishawaka.
Directors—A. C. Arbogast, Northern Indiana Brass Co., Elkhart.
W. A. Bachman, New York Central Railroad, Elkhart.
A. J. Rumely, LaPorte Foundry Co., LaPorte, Ind.
W. A. Schlosser, Argos Foundry Co., Plymouth.
R. J. McSherry, Studebaker Corp., South Bend.
O. A. Pfaff, American Foundry Equipment Co., Mishawaka.
George E. Stoll, Bendix Products Corp., South Bend.
B. J. Voll, Sibley Machine & Foundry Co., South Bend.
J. E. Drain, Oliver Farm Equipment Co., South Bend.
S. W. Howard, Weil-McLain Co., Michigan City.
F. T. McGuire, Sibley Machine & Foundry Co., South Bend.
R. E. Patterson, Elkhart Foundry & Machine Co., Elkhart.

Central New York Chapter

Meetings—2nd Friday, Monthly.
Place—Hotel Onondaga, Syracuse, N. Y.
Chairman—Frank C. Wheeler, Kimman & Wheeler, Syracuse.
Vice-Chairman—E. J. Bair, Sr., Utica Radiator Corp., Utica.
Secretary—L. D. Wright, U. S. Radiator Corp., Geneva.
Treasurer—N. H. Boardman, Elmira Foundry Co., Elmira.
Directors—G. M. Thrasher, R. Lavin & Sons, Elmira.
W. Jones, International Heater Co., Utica.
F. F. Shortsleeve, Elmira.
Leo P. Fedegan, International Harvester Co., Auburn.
H. H. Judson, Goulds Pumps, Inc., Seneca Falls.
A. C. Davis, Cornell University, Ithaca.
C. M. Fletcher, Fairbanks Co., Binghamton.
J. W. Barker, Andes Range & Furnace Corp., Geneva.

Cincinnati District Chapter

Meetings—2nd Tuesday, Monthly
Place—Hotel Alms, Cincinnati, Ohio
Chairman—H. F. McFarlin, Lunkenheimer Co.
Vice-Chairman—W. M. Ball, Jr., Edna Brass Mfg. Co.
Secretary—Henry M. Wood, W. W. Sly Mfg. Co.
Treasurer—L. A. Gosiger, S. Obermayer Co.
Directors — Earl H. Thompson, H. P. Deuscher Co., Hamilton.
Robert Frankl, Superior Pattern Co.
Charles C. Erhart, Chas. Erhart Foundry Co.
E. F. Loges, Kramer Bros., Foundry, Dayton.
Herman K. Ewig, Cincinnati Milling Machine Co.
Frank Hutchinson, Reliance Foundry Co.
Herschel Kautz, Cincinnati Milling Machine Co.
J. W. Nichols, Ingersoll Rand Co.

Central Indiana Chapter

Meetings—1st Monday, Monthly.
Place—Hotel Washington, Indianapolis, Ind.
Chairman—I. R. Wagner, Electric Steel Castings Co., Indianapolis.
Vice-Chairman—B. E. Gavin, National Malleable & Steel Castings Co., Indianapolis.
Treasurer—J. P. Lentz, International Harvester Co., Indianapolis.
Secretary—R. A. Thompson, Electric Steel Castings Co., Indianapolis.
Directors—R. L. McIlvaine, Swayne-Robinson Co., Richmond.
E. G. Schmidt, Jr., International Harvester Co., Indianapolis.
B. P. Mulcahy, Citizens' Gas & Coke Utility, Indianapolis.
L. M. McAnly, Rockwood Mfg. Co., Indianapolis.
M. B. Falvey, Hoosier Iron Works, Kokomo.
L. E. Davis, Republic Coal & Coke Co., Terre Haute.
S. A. Norrick, Perfect Circle Co., New Castle.
S. C. Wasson, National Malleable & Steel Castings Co., Indianapolis.
H. B. Harvey, Indiana Foundry Corp., Muncie.
C. M. Hardy, Hougland & Hardy, Inc., Evansville.

Chesapeake Chapter

Chairman—E W. Horlebein, Gibson & Kirk Company.
Vice-Chairman—J. E. Crown, U. S. Navy Yard, Washington, D. C.
Secretary-Treasurer—L. H. Denton, Baltimore Association of Commerce.
Directors—H. S. Malsberger, American Chain & Cable Co., York, Pa.
H. A. Horner, Frick Co., Waynesboro, Pa.
J. C. Pendleton, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.
C. L. Frear, U. S. Navy Dept., Bureau of Ships, Washington, D. C.
C. C. Adams, Bethlehem Steel Co., Sparrows Pt., Md.
S. W. Brinson, U. S. Navy Yard, Portsmouth, Va.
Wm. C. Franz, Flynn & Emrich Co.
Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va.
V. F. Stine, Pangborn Corp., Hagerstown, Maryland.

Management — Draft Act Affects Your Employees

ACCORDING to a recent bulletin issued by the Chicago Branch of the National Metal Trades Association, there are several important considerations on which employers should be informed regarding Selective Service Act deferments. Briefly, these considerations, listed in the bulletin, are listed as follows:

1. Deferments are determined on an individual basis only.

2. There is no "exempt industry."

3. There is no "exempt class of employees."

4. The employer is urged to help his employees in filling out the industrial part of their questionnaires.

5. Employers are supplied with separate forms (Form No. 42) for reporting on or requesting deferments.

6. In requesting deferments, employers are urged to examine carefully and determine the absolute necessity of the individual to the operation of the plant.

7. Deferments are for periods of not more than 6 months. Deferments may be renewed.

8. In requesting deferments, some employers are analyzing the time necessary to train substitutes.

9. Should a deferred employee's status change, the employer should immediately notify the local board.

10. In case of an adverse decision by the local board, the registrant and/or his employer has the right to appeal to the appeal board.

11. Each state has an advisor on industrial deferments. For additional information on occupational deferments under the Selective Service Act, contact either your state or local advisor on this subject.

NEW CHAPTER OFFICERS

V. A. Crosby

V. A. Crosby, Detroit Chapter

Mr. Crosby is a native of Mississippi and a graduate of the state university with a B. S. in chemistry. Following his graduation, in 1916, he entered the employ of Dodge Bros. Co., Detroit, automobile manufacturers, and a year later entered the U. S. Army as second lieutenant to serve during the war. After he was relieved from duty, he became associated with the Packard Motor Car Co., Detroit, as foundry metallurgist and later as chief metallurgist. He resigned that position to become foundry metallurgist, Studebaker Corp., South Bend, Ind., where he served for 12 years. In 1934, he assumed his present position as metallurgical engineer, Climax Molybdenum Co., Detroit.

Mr. Crosby has written for the technical press and presented papers before several technical societies on a variety of subjects. He has been a member of the American Foundrymen's Association for many years and has been very active in committee work and in the presentation of papers on core oils, sand control, production of high test cast iron and alloy cast iron. In addition to A.F.A., Mr. Crosby is a member of A.S.M. and A.S.T.M.

J. Morgan Johnson, Quad City Chapter

Active as Quad City chapter's secretary-treasurer is J. Morgan Johnson, vocational supervisor, Moline, Ill. schools and affiliated with Tri-City Manufacturers' Association. Mr. Johnson's experience with vocational supervision dates back to 1918 when he was industrial arts instructor in Davenport, Ia., schools. He later became training supervisor with the U. S. Veterans' Bureau at St. Louis, Mo., and Des Moines, Ia., till 1926. For the next three years he was again employed at Davenport as an apprentice instructor in the schools and in 1929 moved over to Moline, Ill., as vocational supervisor.

Mr. Johnson was born in Marquette, Mich. He attended the Marquette public school and high school. He was graduated with a degree from Western Reserve University.

He has written articles for the technical press relating to apprenticeship and apprentice instruction.

Aside from A.F.A. activities, Mr. Johnson also is a member of A.S.M. and the American Vocational Association.

N. B. Clarke, Ontario Chapter

Norman B. Clarke, assistant superintendent, blast furnace and coke oven departments, The Steel Company of Canada, Hamilton, was elected vice-chairman of the Ontario chapter. Mr. Clarke has been employed by this company since 1929. He was formerly employed by the American Steel & Wire Co., Cleveland, from 1919 to 1929.

Many of Canada's societies, such as The Hamilton Chemical Society, The Engineering Institute of Canada and The Canadian Institute of Mining and Metallurgy, are familiar with the lectures Mr. Clarke has presented on "The Blast Furnace and Its Operation."

Mr. Clarke was born in Cleveland, O., and received his education in that city. He attended Glenville High School and was graduated from Case School of Applied Science in 1918 with a civil engineering degree.

B. L. Simpson

B. L. Simpson, Chicago Chapter

Succeeding L. L. Henkel as Chicago chapter secretary is Bruce L. Simpson, vice president, National Engineering Co. Born in Chicago, Ill., Mr. Simpson received his elementary education in the public school and high school in Evanston, Ill. He was graduated from Northwestern University.

Along with his A.F.A. activities Mr. Simpson is also a member of the American Chemical Society.

Earl Anderson, Southern California Chapter

Treasurer Earl Anderson, Southern California chapter, is Los Angeles branch manager, Enterprise Foundry Co. Mr. Anderson is proud to relate that he has been connected with the above firm for 31 years. He has served in various capacities since joining the company in 1909. He has been a molder, foreman, salesman and has been employed in his present position, branch manager, since 1927.

Mr. Anderson was born in San Francisco and received his schooling there.

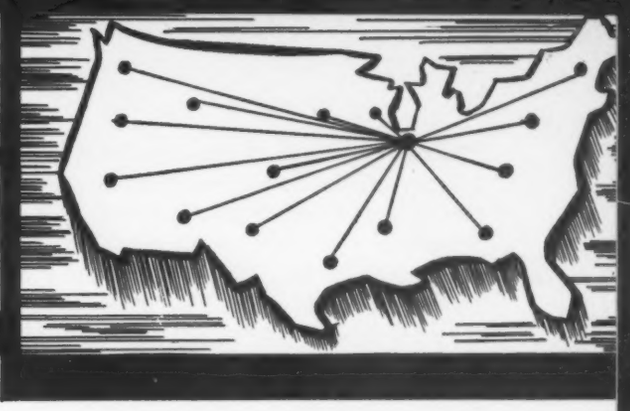
He also is a member of the Gray Iron Founders' Society's Southern California chapter.

J. Morgan Johnson

N. B. Clarke

Earl Anderson

Chapter Activities



Second Sand Lecture at Central New York

By L. D. Wright*, Geneva, N. Y.

CENTRAL New York chapter heard the second in a series of lectures prepared by H. W. Dietert, Harry W. Dietert Co., Detroit, Mich., on "The Sand in Your Foundry." The 90 members that gathered at the Onondaga Hotel, November 8, were treated to one of the most instructive lectures presented by the A.F.A. medal winner before the chapter on this topic. Chapter Chairman Frank C. Wheeler, Kimman & Wheeler, was in charge of the meeting.

Following the dinner Mr. Wheeler turned the meeting over to H. W. Dietert who proceeded to talk on "Sand Behavior in the Mold and Mold Zones." The speaker's platform resembled a sand laboratory as Mr. Dietert had brought with him a high temperature furnace, sintering recorder and other sand equipment. With the use of this equipment a demonstration was given showing the reaction of different sands at pouring temperature. What is meant by "the sintering point of sand" was thoroughly explained to those present by a practical demonstration, using the sintering recorder.

During the course of the lecture the speaker said the mold zones are: green, dry, hot and fused. The part which each of these zones plays in the mold and the temperature which each zone attains during the pouring of a casting was described and correlated with the demonstration in the high temperature furnace and the sintering recorder.

In such a manner is Mr. Dietert able to bring to the foundryman a new conception of the part played by sand in the production of castings. The manner in which the members questioned Mr. Dietert about his statements makes this series of talks more beneficial and instructive to all concerned.

*Supt., United States Radiator Corp., and Secretary, Central New York chapter.

Evans Speaks on Cupola Research at Chicago

By B. L. Simpson*, Chicago, Ill.

AN enthusiastic group of foundrymen gathered December 9 at the regular chapter meeting.

Prior to the main program, a motion picture of the Foundrymen's Outing, held last fall, was shown to the group. These motion pictures were taken by J. C. Thomas, Whiting Corp., Harvey, Ill., and were received with a great deal of applause.

The chapter then presented G. S. Evans, research metallurgist, Mathieson Alkali Works, Inc., New York City, who discussed the topic of "Cupola Research." Mr. Evans is chairman, Finance Committee Cupola Research Committee of the American Foundrymen's Association, and also chairman, Sub-Committee on Slags, Fluxes and Desulphurizers.

A general summary of the program of the Cupola Research Committee was explained. The purpose of this committee was described as three-fold: First, to review literature on cupola design and operation. Second, to compile all worthwhile literature into a cupola hand-book. The third function was to advance the fundamentals of cupola practice through research.

Mr. Evans announced that the committee was already functioning in connection with the Battelle Memorial Institute, Columbus, Ohio, and had jointly, with that institute, established a fellowship for forwarding these purposes. He explained that the possibilities of research were tremendous; and the economies to the foundry industry, even if measured in small percentages which might result from such research, were very worth while.

Mr. Evans then went on to discuss the phase of cupola research with which he is most familiar, namely, fluxing and desulphurizing. It was his opinion that there is a definite relationship between oxidation and fluxing. He pointed out that some foundrymen believe that it is cheaper to use flux for cleaning the cupola than the labor required but, on the other hand, stated that an excessive volume of slag seems to increase oxidation.

He then developed the various phases of fluxing, pointing out that the information available to the foundrymen was quite incomplete. For example, further information was needed on the argument of dolomite vs. limestone. In addition, he pointed out the advantages of soda ash—the results of which many of us know, but the reasons for which we do not know. He stated that soda ash seems to reduce oxidation in many cases and cleaned up shrinkage and other defects. He also noted that soda ash increases

*Secretary, Chicago chapter and National Engineering Co.

the rate of combustion by about 6 times, while limestone increases the rate of combustion about 1½ times.

From this, Mr. Evans went on to the discussion of fluorspar—its effects on liquefying slag, and the general subject of desulphurization.

After his main address, Mr. Evans was kept for an interesting discussion period which covered some, or all, of these points in detail.

Twin City Foundrymen Hold Meetings

By O. W. Potter*, Minneapolis, Minn.

EARL E. Woodliff, Harry W. Dietert Co., Detroit, Mich., was the speaker for the Twin City Foundrymen's Association meeting held November 18. The 35 members and guests meeting at the new Coffman Memorial Union were treated to an enjoyable presentation by Mr. Woodliff concerning "Sand Testing and its Relation to Sand Control." The speaker had a complete set of sand testing equipment set up which he used in connection with his talk. Many of those present brought sand samples which were tested and discussed.

The first meeting held in September was taken up in visiting the Griffin Wheel plant and hearing L. H. Rudesill, metallurgist, Griffin Wheel, give an instructive lecture on hot-blast cupola and general cupola practice.

*University of Minnesota and Secretary, Twin City Foundrymen's Association.

Metropolitan Chapter Hears About Cupola Operation

By W. A. Phair,* New York, N. Y.

DONALD J. REESE, metallurgist, International Nickel Co., New York, spoke on "Cupola Operation" before the Metropolitan chapter December 4. The meeting was held in the Essex House, Newark, N. J., and was in charge of Chapter Chairman R. J. Allen, Worthington Pump & Machinery Co., Harrison, N. J.

Mr. Reese, who is recognized as an outstanding authority on cupola operation work, gave a fundamental and practical discourse concerning the operation of cupolas. His years of experience in the cupola operation field give him a vast amount of material from which he can draw and which make his lectures more interesting and valuable.

Following his talk the speaker threw the meeting open for discussion and the men present asked numerous questions relating to some of their own shop problems and statements made by the speaker during his speech.

*Secretary, Metropolitan chapter, and "The Journal of Commerce."

Members of the Northern Illinois-Southern Wisconsin chapter enjoying themselves at their December 7 Christmas party. The four committee members, center of photos, seem quite pleased about their party's success. Note the pourer made of ice in the bottom row of photos, second from left. The lower right hand picture shows the boys cramming their plates full of those good Swedish smorgasbord delicacies.
(Photo courtesy John Bing, A. P. Green Fire Brick Co.)

Dr. Kinzel Addresses Central Indiana Meeting

By R. A. Thompson,* Indianapolis, Indiana

THE speaker for the December 2 meeting of the Central Indiana chapter was one of the country's most noted authorities on metallurgy, Dr. A. B. Kinzel, Chief Research Metallurgist, Union Carbide & Carbon Co., New York. The meeting was held at Washington Hotel, Indianapolis, with some 65 members at the dinner. Following the dinner 60 more came in to hear Dr. Kinzel's talk. With Chapter Chairman I. R. Wagner, Vice President, Electric Steel Castings Co., presiding, Dr. Kinzel took as his topic "Foundry Metallurgy Brought Down to Earth." He presented the fundamental features of casting metallurgical control in such an understandable and interesting fashion that discussion after the presentation lasted for over an hour.

*Electric Steel Castings Co., and Secretary, Central Indiana chapter.

N.I.-S.W. Chapter Holds Xmas Party at Rockford

By J. E. Cochran,* Rockford, Ill.

THE annual Christmas party of the Northern Illinois-Southern Wisconsin chapter, held the evening of December 7 at Hotel Faust, Rockford, was one of the most successful and best attended in the chapter history. Over 275 partook of the bountiful Swedish smorgasbord supper, put on in style for which this district is famous. After the supper the guests were entertained with an extensive floor show of acrobatic acts, dancing and juggling. The evening was voted one of the most pleasant held.

The next meeting of the chapter will be held January 14 at the same place, with Elmer J. Carmody, C. C. Kawin Co., Chicago, speaking on "Gating and Heading Castings."

*Metallurgist, Sundstrand Machine Tool Co., Foundry Div., and Secretary, Northern Illinois-Southern Wisconsin Chapter.

Wisconsin Chapter Plans Fourth Annual Regional Conference

FEBRUARY 20 and 21 have been set as the dates for the Fourth Annual Regional Conference to be held at Milwaukee, Wisconsin, under the auspices of the Wisconsin chapter and the University of Wisconsin. Details of the meeting were worked up by the Conference Committee during a meeting held recently.

These annual conferences have made an outstanding reputation because of the excellence of the speakers and extensive discussions. This coming meeting will be even more truly an educational opportunity for those affiliated with the foundry industry. Various phases of the manufacture and application of castings and their "romance" in relation to the everyday products of the industry will be taken up. The theme of the conference will be National Defense and the development of the foundry industry with speakers of national prominence. An added feature will be answering of foundry questions that are being accumulated through a series of questionnaires.

The committee is preparing to care for an attendance in excess of that of last year which ran somewhat over 500.

Ziebell and Oesterle Head Committee

The co-chairmen of the Conference Committee are A. C. Ziebell, Universal Foundry Co., Oshkosh, vice chairman of the chapter, and Prof. J. F. Oesterle of the University of Wisconsin, representing the two sponsoring bodies.

Sectional Committees

Chairmen of the sections are: *Gray Iron,* Harry Ladwig, Allis-Chalmers Mfg. Co.; *Malleable,* Charles Gutenkunst, Milwaukee Malleable & Grey Iron Foundry Co.; *Steel,* Paul Power, Maynard Electric Steel Casting Co., and *Non-Ferrous,* Walter Edens, Ampco Metal, Inc.

Committee Personnel

Others serving on the committee are:

Ben Claffey (chairman, Wisconsin chapter), General Malleable Corp., Waukesha, Wis.

David Zuege, Sivyer Steel Casting Co., Milwaukee, Wis.

R. F. Jordan, Sterling Wheelbarrow Co., Milwaukee, Wis.

George Pendergast, Geo. M. Pendergast Co., Milwaukee, Wis.

Roy Jacobs, Standard Brass Works, Milwaukee, Wis.

Wm. J. MacNeill, Federal Malleable Co., West Allis, Wis.

George Dreher, Ampco Metal, Inc., Milwaukee, Wis.

T. E. Ward, Badger Malleable & Mfg. Co., So. Milwaukee, Wis.

Howard Waldron, Nordberg Mfg. Co., Milwaukee, Wis.

Harry Donald, Interstate Supply & Equipment Co., Milwaukee, Wis.

Prof. E. R. Storey, University of Wisconsin, Madison, Wis.

Ray Flansburg, Belle City Malleable Iron Co., Racine, Wis.

John Bing, A. P. Green Fire Brick Co., Milwaukee, Wis.

James Ewens, Milwaukee Steel Foundry Co., Milwaukee, Wis.

Fred Pritzlaff, Falk Corporation, Wauwatosa, Wis.

Macleod Lewis, Badger Malleable & Mfg. Co., So. Milwaukee, Wis.

William Hambley, Allis-Chalmers Mfg. Co., West Allis, Wis.

D. E. Stephens, H. Kramer Co. (Chicago, Ill.), Milwaukee, Wis.

A. K. Higgins, Allis-Chalmers Mfg. Co., West Allis, Wis.

L. A. Pankratz, Quality Aluminum Co., Milwaukee, Wis.

Australian Foundry Practice Heard at Pittsburgh

By R. L. Hartford*, Pittsburgh, Pa.

DIFFICULTIES encountered in foundry practice in Australia were outlined to the Pittsburgh Foundrymen's Association at their November 18 meeting.

A. M. Ondreyco, association past president, who recently returned from a two year sojourn "down under," was the speaker. Included in his discourse were a few interesting remarks about his voyage to and from Australia and some slides showing several Australian foundries and their equipment.

Generally speaking the practice in Australia is considerably behind that of our country. However, in many instances their equipment and methods are

*Penton Publishing Co., "The Foundry" and Reporter, Pittsburgh Foundrymen's Association.

A picture of the Wisconsin chapter's conference committee who are forming plans for this year's program. Front row, left to right—Fred Pritzlaff, Falk Corp.; Paul C. Power, Maynard Steel Casting Co.; A. C. Ziebell, chairman, Universal Foundry Co.; Professor J. F. Oesterle, University of Wisconsin; David Zuege, Sivyer Steel Casting Co.; W. J. MacNeill, Federal Malleable Co.; Harry Donald, Interstate Supply and Equipment Co.; Howard Waldron, Nordberg Mfg. Co. Back row, left to right—W. Hambley, Allis-Chalmers Mfg. Co.; Walter Edens, Ampco Metal Products Co.; R. F. Jordan, Sterling Wheelbarrow Co.; Walter Gerlinger, Walter Gerlinger, Inc.; B. D. Claffey, General Malleable Corp.; George Dreher, Ampco Metal Products Co.; A. K. Higgins, Allis-Chalmers Mfg. Co.; George Pendergast, George Pendergast Co.; and C. A. Gutenkunst, Jr., Milwaukee Malleable & Grey Iron Works. John Bing, A. P. Green Fire Brick Co., also of this committee, took the group's picture.

the equal of our own. This is particularly true in the automotive production line where the foundries are highly mechanized. One prevalent practice in Australian plants, which is interesting to note, is casting on the foundry floor using only a cope.

Probably the most difficult problem in Australian foundry operation concerns sand. In most cases it is necessary to use a purely local sand because of the transportation difficulties involved from both within and without. There is no transcontinental railroad in Australia, each system operating within a single state and in nearly all cases of different gauges, making transshipment necessary at each state line. In this way the foundry must rely on whatever material it has available.

During the present war period mechanized foundry equipment has to be made on the spot, since machinery must be shipped either from England or America and costs are too high for that. The demands made on foundries, generally, are not so strict as in this country and precision methods are not as vital.

Wisconsin Holds Second Round Table Discussion

By H. C. Waldron*, Milwaukee, Wis.

THE second round table discussion held by the Wisconsin chapter, November 15, at the Schroeder Hotel, was in charge of Chapter Chairman B. D. Claffey, General Malleable Corp., Waukesha. The 200 members and guests that assembled for the four group conference established a new chapter record in attendance for a meeting of this kind.

*Nordberg Mfg. Co. and Secretary, Wisconsin chapter.

(Photos courtesy John Bing, A. P. Green Fire Brick Co.)

A few shots of the November 15 Wisconsin chapter meeting. (Top—left to right) Carl Haertel, Falk Corp.; Dave Zuege, Sivyer Steel Casting Co.; and R. C. Woodward, Bucyrus Erie Co.; seated at the speaker's table. (Bottom left) J. Garrard and Frank Russell talk things over after the meeting is over. (Bottom right) George Dreher, Wisconsin chapter's program chairman.

Following the dinner Mr. Claffey turned the meeting over to George Dreher, Ampco Metal, Inc., Milwaukee, who introduced the after dinner speaker Dr. E. R. Krumbiegel, City Health Commissioner. Commissioner Krumbiegel spoke on "Infantile Paralysis."

After this talk the members and guests split up into their respective groups, namely: gray iron, steel, malleable and nonferrous.

The gray iron men, under the leadership of G. S. Evans, Mathieson Alkali Works, Inc., New York, discussed "Cupola Operations and Research." Mr. Evans based his talk around the types of cupola slags and the various fluxes available for cupola use. It was of the general opinion that cupola slags should be analyzed and controlled in line with the control of the metal and other material in the foundry. The speaker also stressed the urgent need for cupola research and study of cupola slags, and tied in the new cupola research program being launched by the American Foundrymen's Association of which Mr. Evans is finance committee chairman.

The steel group had for their topic of discussion "Casting Defects and Their Remedies." This group was under the leadership of Robert Woodward, metallurgist, Bucyrus-Erie Co., Milwaukee, and Carl Haertel, assistant foundry superintendent, Falk Corporation, Milwaukee. Sand and metal control were the main subjects of discussion with special attention being given to border line cases where adjustment in both sand and metal must be made.

A. W. Gregg, Whiting Corp., Harvey, Ill., and J. C. Peirce, sales manager, Hydro-Blast Corp., Chicago, consolidated in leading the malleable session on "Cleaning Methods." The water and sand method of cleaning castings came in for the biggest share of discussion and the speakers commented on a few changes that have occurred in new equipment of this type. Slides were used to show some

of the new cleaning equipment.

Two men, A. Schwartz, president, and J. Budnik, superintendent, from the Wisconsin Aluminum Foundry Co., Manitowoc, had charge of the non-ferrous men. A considerable part of this meeting was spent on consideration of problems in producing pressure type aluminum castings. Mr. Budnik pointed out that extreme care must be used in drying cores for this type work. Insufficiently baked cores result in dross and dirt. A long baking cycle is recommended and uniform penetration of heat through the core. It also was pointed out that proper temperature control was very essential to obtain pressure tightness. Rapid pouring of aluminum for this type of work was recommended.

Cupola Research Discussed at Quad City Meeting

By J. Morgan Johnson*, Moline, Ill.

GEORGE S. Evans, Mathieson Alkali Works, New York, outlined briefly the American Foundrymen's Association's Cupola Research project to the 100 local foundrymen that attended the November 18 Quad City chapter meeting. Chapter Chairman Nathan Lesser, Deere & Co., Moline, headed the meeting held in the LeClaire Hotel, Moline.

Mr. Evans spoke on the fundamentals of cupola operation and stressed the need for cupola research in the foundry industry. He then went on to add that the American Foundrymen's Association is going to sponsor a cupola research investigation and will except some of the best practices of cupola practice and operation in this country as a basis for their research project. The study, as the program has been worked out, will involve costs of materials, selection of equipment, costs to have obsolete equipment and the removal of the numerous items that have caused so many different answers and opinions when discussed.

The various field divisions of cupola operation, such as fluxes and fluxing a cupola, will be given consideration. In this particular division many problems as kinds of fluxes, quantity used, desulphurizing and the refractories would be investigated to see what effect they have on cupola operation. Various other branches are to be taken into consideration and studied in detail by experts familiar with practices of their respective divisions.

*Tri-City Manufacturers' Assn., and Secretary-Treasurer, Quad City chapter.

Northern California December Meeting

By G. L. Kennard*, San Francisco, California

ALTHOUGH Friday, the 13th, meetings seem to come quite often in our schedule, despite the "jinks" usually connected with that date, our meeting of Friday, the 13th of December, brought out an excellent attendance. Announcement was made at this meeting of the 1941 annual A.F.A. Convention and of the 17th annual Iron and Steel Conference of California which is to be held in February at Del Monte. This meeting was made an especial occasion for forwarding to Charlie Henderson, first chapter chairman, congratulations on his recent marriage. Two beautiful framed pictures were displayed and forwarded to Mr. and Mrs. Henderson, with the chapter's best wishes.

Two special guests were present from Los Angeles, C. B. Tibbetts, Los Angeles Steel Casting Co., and N. K. Anderson, Honey Brook Casting Co. Mr. Tibbetts extended greetings from the Southern California chapter, inviting the Northern California chapter members to their December Christmas party. As a coffee talk feature, Ed Patherick of the Norton Co., a new member, showed sound movie films on the Manufacture of Grinding Wheels.

Charlie Hoehn, chairman of the board, Enterprise Foundry Co., and past chapter chairman, introduced the main speaker of the evening, Earl Lee Kelley, vice president of the Bank of America. Mr. Kelley discussed in an interesting and understandable fashion his impressions of business for the near future.

*Secretary-Treasurer, Northern California chapter.

Detroit Organizes Plans for Lecture Course

AT the first meeting of the Detroit chapter's Educational Course Committee, headed by Chairman E. K. Smith, Electro Metallurgical Co., the framework was prepared for the 1940-41 lecture course.

Chairman Smith, and his committeemen, worked out a tentative schedule of speakers and subjects along the lines which they believed would capture the interest of the majority of members. The theme to be used, according to the committee's expectations, in this year's series of lectures will be the effect of various variables in foundry practice on the production of better castings. Many outstanding men connected with the foundry industry in the Detroit area are to be asked to present talks before the chapter members at these lectures.

Plans have already been made by Chairman Smith to use the Physics Room, Detroit University, as the lecture hall on successive Fridays from February 28 to April 4.

The following list of committeemen were present at the first meeting: E. K. Smith, *chairman*, Electro Metallurgical Co.; V. A. Crosby, Climax Molybdenum Co.; A. L. Boegehold, General Motors Research; E. J. Ash, University of Michigan; F. J. Walls, International Nickel Co.; A. Allen, Penton Publishing Co.; O. F. Carpenter, Packard Motor Co.; A. J. Gonter, Chrysler Corp., Dodge Foundry; E. C. Jeter, Ford Motor Co.; W. B. McFerrin, Cadillac Motor Co.; O. Sundstedt, General Foundry & Machine Co.; R. J. Wilcox, Michigan Steel Casting Co.; H. W. Dietert, Harry W. Dietert Co.; E. J. Burke, Hickman, Williams Co.; and W. Larson, Cass Technical High School.

Hygiene Director Explains State's Industrial Service

By M. A. Hosmer*, Boston, Mass.

PRESIDENT FRANCIS LeBARON ruled over the 60 members who attended the December 11 meeting of the New England Foundrymen's Association held in the Engineers' Club, Boston, Mass.

The speaker of the evening was Manfred Bowditch, Director of the Division of Occupational Hygiene, Massachusetts Department of Labor and Industries, and he chose as his subject "Call Capitol 0687."

Mr. Bowditch opened his remarks by stating that the purpose of the division was to assist the foundry industry, as well as other industries, in every way possible. He wanted it to be known that his office did not command or wield a club. He expressed a desire to have employers come to him with their problems freely, with no thought of his connection with the state, and with the assurance that they would receive co-operation and helpful advice. There is no fee connected with the services rendered and all findings of the bureau are prohibited from being used in cases tried before the Industrial Accident Board.

The objects of the division have been, since its organization in 1935: (1) to keep their feet on the ground technically, (2) to make it their business to be helpful to industry and (3) try to overcome the handicaps of being regarded as just one more government nuisance. It has been found that this can be accomplished first by studying the problem from the beginning; a chemist being sent out if it is a fume hazard; an engineer if it is a dust hazard; and a physician if it is a problem of ill health.

The co-operation of the company is all that is asked in carrying out the suggestions of the division and further education is given through its effort from time to time in connection with each problem. All jobs of the division are carefully and thoroughly followed up to a finish, to see that conditions are adjusted according to the ability of the employer to overcome his difficulties. Out of 1,400 cases investigated, only seven showed lack of co-operation in efforts to remedy bad conditions.

Mr. Bowditch stated that in his opinion, silicosis in the foundry is on the mend, but an increase in tuberculosis cases is becoming apparent, and he believed that his work in the future would be to prevent the latter disease from acquiring a prominent place in the foundry industry.

*Reporter, New England Foundrymen's Association, and Chemist, Hunt-Spiller Manufacturing Company.

Foundry Cost Discussed at Michiana Chapter

By M. F. Surls*, Buchanan, Mich.

D. P. FORBES, Gunite Foundries Corp., Rockford, Ill., spoke on "Foundry Cost and Operation" before 65 Michiana chapter members and guests, December 3, at the Hotel LaSalle, South Bend, Ind. Chapter Chairman M. F. Doty, Clark Equipment Co., Buchanan, Mich., was in charge of the evening meeting.

The speaker commented that a foundry, in order to be successful and pay dividends to the stockholders, must make their quotations from accurate cost estimates. Such estimates must include all the elements of cost. Elements going to make up complete cost are manufacturing, selling, office expense, cost of rejected castings, and in addition the profit that should be received for the job. To do this the first requisite is a reliable cost system which from past experience gives a dependable figure to be used for each item going into the cost of producing a particular part. The cost system should be flexible enough to take into consideration different types of castings and variations in size of orders. Costs should be based on a normal rate of operation.

The author showed that basing profit on tonnage or on percentage of cost did not give a fair figure as it places too much emphasis on long production machine jobs with very little profit on short run jobs although more skill and labor may be required on the latter class of work. The suggestion was made by Mr. Forbes that profit be figured on each floor, with compensation allowed for special equipment and extra labor. Quotations should be made in accordance with figures obtained from the cost system. Each job should be quoted separately if the foundry expects to make a profit on its work.

The practice of making a single quotation covering a miscellaneous group of castings should be discouraged as it allows a competitor to under-bid on the better machine jobs, leaving the original bidder with the least desirable work which he may have to make at a loss.

*Reporter, Michiana chapter, and Clark Equipment Co.

Casting Defects Studied at Central New York

By L. D. Wright*, Geneva, N. Y.

H. W. DIETERT, Harry W. Dietert Co., Detroit, Mich., presented his third lecture, "Casting Defects," based on "The Sand in Your Foundry," before Central New York chapter members December 13. Chapter Chairman F. C. Wheeler, metallurgist, Kimman & Wheeler, Syracuse, N. Y., had charge of the meeting.

In this talk Mr. Dietert dealt with the difficulties confronting the foundrymen today in everyday commercial foundry practice.

*Supt., U. S. Radiator Corp., and Secretary-Treasurer, Central New York chapter.

Massari Speaks Before Birmingham Meeting

By D. L. Booker*, Birmingham, Ala.

THE regular monthly meeting of the Birmingham chapter was held November 15 at the Tutwiler Hotel. Chapter Chairman W. O. McMahon, Sloss-Sheffield Steel & Iron Co., Birmingham, presided. S. C. Massari, Association of Manufacturers of Chilled Car Wheels, Chicago, delivered a very interesting talk, accompanied by lantern slides, on "Automatic Cupola Control by Means of Controlled Combustion and the Effect of Melting on the Ultimate Behavior of the Iron."

The speaker explained the behavior of the cupola melt by various carbon dioxide contents. With a high carbon dioxide content, the manganese and silicon losses are high and a low carbon dioxide content the losses are very low. For best efficiency, he states, a 13 per cent carbon dioxide should be maintained. He made mention of the fact that it is always well to remember that carbon monoxide is a carburizing gas and carbon dioxide is a decarburizing gas. He showed, by slides, that the obviation of carbon growth and dispersion increase with a drop in temperature.

At the close of the talk the speaker was asked many questions regarding the topic he had covered.

*National Cast Iron Pipe Co. and Secretary-Treasurer, Birmingham District chapter.

E. K. Smith Addresses Western New York Chapter

By Eliot Armstrong,* Buffalo, N. Y.

AN unusually large group of members and guests were in attendance at the December 6 meeting of the Western New York chapter, held at the Hotel Touraine, Buffalo. With Chapter Chairman John C. McCallum, McCallum-Hatch Bronze Co., presiding, E. K. Smith, Electro-Metallurgical Company of Detroit, was introduced as the main speaker of the evening. He gave an especially interesting talk on the use of alloys in casting manufacture, illustrating his discourse with lantern slides.

A coffee talk was given by Commander R. S. Smith, Jr., in charge of naval inspection in the Buffalo district. He discussed some of the pressing problems facing industry in connection with defense work, stressing items that have been overlooked in connection with foundries' responsibilities as an industry.

Richard R. Dry, principal of the Buffalo Technical High School, was introduced as in charge of the only school of the district giving foundry training. He discussed the efforts made by the Board of Education to co-operate in defense training. He referred to the fact that the foundries were taking his boys faster than they could be replaced.

*Inter-Allied Foundries of New York State and Secretary, Western New York chapter.

Book Review

Pattern Making, by J. Richey and revised by W. W. Monroe, C. W. Beese and P. R. Hall, 5½x8½, cloth cover, 233 pp., 350 illustrations, published by American Technical Society, Chicago. Price $2.00.

This book is obviously for the student and beginner. It discusses such subjects as the types of woods and metals used in pattern making, tools used in wood pattern making, measuring tools, machines and machine tools, the effect of molding practice on pattern design, various types of patterns. The latter section of the book is devoted to a discussion of metal pattern making, including such subjects as tools and machines used, operations in making a metal pattern, and types of metal patterns.

Steel Casting Film Available

THE Steel Founders' Society of America, 920 Midland Building, Cleveland, Ohio, recently completed a sound slide film explaining the known and tested principles of steel casting design. The film is available to interested organizations.

New Englanders Hold Special Meeting

By M. A. Hosmer*, Boston, Mass.

A SPECIAL meeting of the New England Foundrymen's Association was held November 26 in the Hotel Statler with the Mystic Iron Works, Boston, acting as host.

There were many entertaining features at this meeting and everyone enjoyed themselves immensely. The speaker of the evening was W. G. Strathern, Sales Training Director, Mystic Iron Works, who presented a most interesting address about "Standing Still or Going Ahead."

The speaker elaborated on the qualifications of a good salesman and stated that the ability to smile is a great asset. The three main essentials for a good salesman are: Make the other fellow feel important, make use of the three fundamental requisites which are, technical knowledge; hard work; and personality, and acquire ever increasing enthusiasm for your job.

*Reporter, New England Foundrymen's Association, and Chemist, Hunt-Spiller Manufacturing Corp.

New Conditions in Nonferrous Field

(Concluded from Page 9)

control is being used to greater extent in the larger foundries. In some specific applications, x-raying of castings is required and some of the larger plants have developed their own technique for this particular operation. These plants also have used x-raying as a method of studying proper introduction of the metal into the mold.

The first and foremost requirement in the non-ferrous industry is that its members avail themselves of all the information existing in their respective fields so that an improved product, both as to quality and properties, may be evolved.

With the knowledge available and the requirement to operate under the new conditions, nothing less than progress and the all-around good of the industry can result.

Abstracts

NOTE: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.
When copies of the complete articles are desired, photostat copies may be obtained from the Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Cast Bells

JAPAN. *"Bells of Japan,"* by J. R. Nichols, *Foundry Trade Journal,* vol. 63, No. 1257, September 19, 1940, pp. 185-186. This article gives a general review of the bell making industry of Japan. The historical background is explained and reveals the unique manner which the Japanese bell casters use to pour molten metal into molds. (C.)

Cast Iron

ANALYSIS. *"Chemical Analysis of Alloy Cast Iron,"* by E. Taylor-Austin, *Foundry Trade Journal,* vol. 63, No. 1259, October 3, 1940, pp. 220-222, 230. The methods used to determine the amount of aluminum, titanium, vanadium and other alloys used in cast iron are described. The details of the procedure also are given. The details give all data and materials used in the analysis and the reactions of the chemical ingredients used. (C. I.)

CHEMICAL ANALYSIS. *"Chemical Analysis of Alloy Cast Iron,"* by E. Taylor-Austin, *Foundry Trade Journal,* vol. 63, No. 1258, September 26, 1940, pp. 201-202. Elements, the presence of which was regarded, until a few years ago, as accidental, are now being added to cast iron to impart definite physical characteristics. The analysis of cast iron containing alloy additions presents a new problem, both difficult and complex. In addition to changes brought about by added elements, certain methods have been superseded by others which are either more rapid or more accurate than their predecessors. The introduction of organic re-agents into quantitive inorganic analysis has played a large part in the development of modern methods of analysis and has made possible certain rapid methods now in use for the determination of such elements as molybdenum. Dealing with the effects of alloy additions on the reorganized procedures for the determination of the common constituents of cast iron the methods for determining the percentages of total carbon, graphitic carbon, silicon, manganese, sulphur, phosphorus, nickel, chromium, copper and molybdenum are given. (C. I.)

FLAME HARDENING. *"Flame Hardening Standardization,"* by A. L. Hartley, *The Iron Age,* vol. 146, no. 20, November 14, 1940, pp. 48-52. In this paper the writer has attempted to point out some of the problems that should be considered when cast iron or steel parts are flame hardened. An attempt was made to prove that flame hardening properly applied will produce satisfactory microstructures in either cast iron or steel. Definite recommendations were made outlining some of the recommended operating conditions for both materials hardened by the progressive method. Test specimens should be used to make sure the recommended practices fits into the plant's scheme of things, because any operation involving as many variables as are encountered in a flame hardening set-up requires very accurate procedure if uniform high standards are to be maintained. Throughout this article all of the operating conditions are based on the use of one type of equipment; data cannot be applied to other types of equipment. This section of the article deals with distortion of flame hardened parts and the design and use of special tips. (C.I.)

HEAT TREATMENT. *"Distortion in the Heat-Treating of Meehanite Metal,"* by T. E. Eagan, *The Foundry Trade Journal,* vol. 63, no. 1263, October 31, 1940, pp. 281-282. Distortion in the heat-treating of either steel or meehanite is a difficulty that can be held to a minimum only with proper handling. This paper presents briefly some information on the theory of the problem, and to attempt to correlate this with practical experience. Calling the matrix of meehanite pearlite and the flakes graphite the author goes ahead to show what happens to each when a piece is heat treated. Four factors to consider in relation to distortion are: (1) natural expansion and contraction on heating and cooling; (2) expansion caused by the hardening operation; (3) graphitization and (4) scaling. The last operation discussed related to distortion is cooling or quenching method used. (C.I.)

HISTORICAL. *"History of American Iron Industry," Canada's Foundry Journal,* vol. 13, No. 10, October, 1940, pp. 24-25. Early American settlers found iron ore in bogs where it had been washed down from mountains by rivers and streams. The ore was assayed and found to be of good quality and could be used satisfactorily. Various men undertook the idea of starting an "ironworkes," but to John Winthrop, Jr., son of the first governor of Massachusetts colony, goes the credit of getting the first mill into operation. A description of the probable blast furnace is given. It was thought this furnace produced 18 tons of iron a week. The first article cast from the metal melted in the furnace was an iron pot for cooking. The mold for this utensil was made by Joseph Jenks who later became famous for making the dies for the "pine tree shilling." (C. I.)

Cast Steel

CHROMIUM. *"Properties and Heat Treatment of 9 Per Cent Cr.—1.5 Per Cent Mo. Cast Steels,"* by Fred B. Riggan, *Metals and Alloys,* vol. 12, no. 5, November, 1940, pp. 615-619. The purpose of this paper is to give laboratory and field test results obtained during the manufacture of considerable tonnage to the 9 per cent Cr. steel castings. Two other important facts seem to stand out in this study (1) corrosion is the most important in the destruction and early retirement of oil refinery fittings in service up to 1200° F., and (2) chromium is the most effective element in resisting this corrosion at these temperatures. Four groups of four typical heats are described. These castings were given a normalize and draw heat treatment in furnaces especially designed for normalizing castings of this type. Charpy impact tests at room temperature were run on bars that had been repeatedly heated and cooled according to the cycles of the three groups of test bars discussed. In the corrosion test the polished specimens were exposed at room temperature to sea water spray, immersed in aerated 2 per cent sulphuric acid solution, and also aerated 20 per cent nitric acid solution. Comment also is made on comparative costs of the alloy castings discussed. (S.)

GEAR. *"Cast Steel Gears,"* by W. J. Phillips and T. D. West, *Steel,* vol. 107, No. 17, October 21, 1940, pp. 48-50. The use of low alloy steels for castings is perhaps no better evidenced than in the production of gears and blanks. Gear blanks must be free of gas defects, sand inclusions, hot tears and shrinkage cavities because cast gears are thoroughly explored by machining operation. So to combat these unsound castings intensive research now has placed in the founder's hands information which was formerly totally lacking or incomplete. The results of these numerous investigations have rendered defects due to entrapped gas and imbedded sand a minimum danger. The importance of the three types of volume changes which take place during the cooling of the liquid metal from pouring temperatures to solid casting are stressed. (S.)

Core Baking

OVENS. *"Modern Core Baking Ovens,"* by H. M. Lane, *The Iron Age,* vol. 146, No. 16, October 17, 1940, pp. 42-45. Numerous significant changes in design have taken place in recent years in the unspectacular but vitally component of every foundryman's cost sheet—the core oven. A description of these improvements, together with practical hints on improving mixtures and data on the efficiency of modern core ovens, is given in this article. (M. H.)

Cupola

OPERATION. *"Melting Process in the Foundry," Canada's Foundry Journal,* vol. 13, No. 10, October, 1940, pp. 16-17, 22. The general sequence of the metal charge, composed of three principal components are pig iron, gray or other cast scrap and steel. In explaining the action of heat it is stated that steel, with its higher melting point than cast iron, would remain unmelted longer than cast iron, whether pig or scrap. Pig iron has the same melting point as scrap for like composition. Various reasons are given for the purpose of charging steel first in

cupola practice. On a fairly long run, it is pointed out, light and heavy steel scrap should be separated due to the heat of the cupola in connection with light and heavy pieces. Type of scrap to be melted, layer thicknesses of scrap, coke ratio and other important cupola practice problems are discussed. (F.)

Flame-Hardening

CASTINGS. *"Metallurgical Phases of Flame Hardening,"* by R. O. Day, *Foundry Trade Journal,* vol. 63, No. 1258, September 28, 1940, pp. 203, 207. This article on flame-hardening has been given to a discussion of the metallurgical features of the process, such as mechanism of hardening, temperature and temperature gradient, hardness exploration, effect of grain size and microstructure of the hardened case. (Me.)

Furnace

ACID BESSEMER. *"The Acid Bessemer Process of 1940,"* by H. W. Graham, *Metals Technology,* vol. 77, No. 7, October, 1940, pp. 1-14. In this paper attention is directed to the apparent causes of past developments in seeking to perceive the true direction of trends now in existence and effective as bearing upon future developments. The paper discusses the economics of the Bessemer process, but only to the extent that will bear upon the metallurgist's understanding of his responsibility. The problem of the quality of Bessemer steel is reviewed and examples are given of the technical data upon which the reasoning of the paper is based. Matters of engineering design, mechanical maintenance, operation and metallurgical investigation are also surveyed. Comparisons are made between the Bessemer and open-hearth processes for the sake of clear and ready understanding. (F.)

Lighting

FACTORY. *"Factory Lighting," The Metal Industry* (London), vol. 47, No. 13, September 27, 1940, pp. 247-249. The question of the effect of efficient lighting on production is of paramount importance either during peace or war time. This article suggests schemes which conform with the new recommendations of the Departmental Committee on Lighting in Factories. It will be of great interest for readers in this country because it gives some new ideas on lighting facilities of plants which are economical to the plant operator and beneficial in the production of materials. (Se.)

Management

PERSONNEL. *"Foundry Personnel Relations,"* by H. J. Noble, *The Foundry,* vol. 68, No. 10, October, 1940, pp. 53, 92. Effective personnel work depends largely upon three main factors of company policy. The first factor is the degree of sincerity or desire of the company to promote personnel work which will be reflected in its policy covering the relations program. The second factor depends on the personnel of the personnel department. The final and third point is based largely upon the desire and ability to reach and deal with the individual employee rather than the promotion of a program which deals entirely with the mass or with smaller groups throughout the organization. This three point program is commented on in detail and many new ideas promoting good feeling between personnel department and plant organization are set forth. (Mg.)

Steel

INCLUSIONS. *"Non-Metallic Inclusions in Steel—Quantitative Evaluation,"* by W. H. Hatfield and G. W. Giles, *Iron and Steel Institute Paper No. 3/1940,* November, 1940, pp. 1-20. The authors have sought to evaluate the different factors influencing methods of inclusion counting. Experimental evidence is given which indicates the importance of the magnification selected for observation purposes, and it is shown that when examining a number of steels of different characteristics, if the standard magnification for the examination is modified, then the relative order of cleanliness becomes different. It is shown that, while the conditions of polishing materially influence the inclusion count as determined by methods at the present time, a light etching tends to establish what appears to be a more reliable basis for comparison. The authors in closing express their view, resulting from their researches, that until solutions have been found for the present disabilities, the present methods of quantitative estimation of the degree to which steels are contaminated by non-metallic inclusions are impracticable. (S.)

January Chapter Meeting Schedule

January 3
Western New York
Trap & Field Club, Buffalo
Stag Party—Buffet Supper and Entertainment

✦ ✦

January 6
Central Indiana
Washington Hotel, Indianapolis
JOHN F. MODRALL, Eli Lilly & Co.
"Merit Rating"

✦ ✦

January 7
Michiana
La Salle Hotel, South Bend
E. E. WOODLIFF, Harry W. Dietert Co.
"Foundry Sand"

✦ ✦

January 9
Cincinnati District
Joint Meeting with Cincinnati Chapters A.S.M. and A.S.M.E.
Hotel Alms, Cincinnati
C. W. BRIGGS, Steel Founders' Society of America
"Design of Castings"

✦

Northeastern Ohio
Cleveland Club, Cleveland
G. S. EVANS, Mathieson Alkali Works
"Cupola Operation and Research"

✦

St. Louis District
DeSoto Hotel, St. Louis
E. K. SMITH, Electro Metallurgical Co.
"Ladle Additions for Iron and Steel"

January 10
Central New York
Hotel Onondaga, Syracuse
H. W. DIETERT, Harry W. Dietert Co.
"Sand"

Northern California
Alexander Hamilton Hotel, San Francisco
MAX GOLDBERG, Modern Equipment Co.
Sound Motion Picture

✦

Philadelphia
Engineers Club, Philadelphia
DR. N. E. WOLDMAN, Eclipse Aviation Div., Bendix Aviation Corp.
"Non-Ferrous Metals in Aircraft"

✦ ✦

January 13
Chicago
Chicago Towers Club
A. H. MOGENSEN, Industrial Consultant, N. Y. C.
"Work Simplification"

✦ ✦

January 14
No. Illinois-So. Wisconsin
Hotel Faust, Rockford
E. J. CARMODY, C. C. Kawin Co.
"Gating and Heading"

✦ ✦

January 17
Birmingham District
Tutwiler Hotel, Birmingham
JOHN A. MOORE
"Foundry Problems"

Chesapeake
Lord Baltimore Hotel, Baltimore
Smoker

✦

Wisconsin
Schroeder Hotel, Milwaukee
J. H. LANSING, Malleable Founders' Society
"New Uses for Castings"

January 20
Quad City
Fort Armstrong Hotel, Rock Island
C. H. MORKEN, Carondelet Foundry Co.
"Electric Furnace Gray Iron"

✦

Pittsburgh Foundrymen's Association
Fort Pitt Hotel, Pittsburgh
WALTER WHITE, Pittsburgh Rolls Div., Blaw-Knox Co.
"Steel Foundry Practice"
Film on *"Design of Steel Castings"*—Steel Founders Society

✦ ✦

January 30
Ontario
Royal York Hotel, Toronto
Master of Ceremonies—Pat Dwyer, Penton Publishing Co., Cleveland
"Gating Problems"

✦ ✦

Regional Meetings

February 20 and 21
Wisconsin Chapter
Fourth Annual Regional Conference
Hotel Schroeder, Milwaukee

✦ ✦

February 27 and 28
Birmingham Chapter
Ninth Annual Foundry Practice Conference

✦ ✦

March 28 and 29
New England Foundrymen's Association
Fifth New England Foundry Conference
Massachusetts Institute of Technology, Cambridge, Mass.

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